DAY & SONS' INVALUABLE ANIMAL MEDICINES

APPOINTMENT.

ESSENTIALS TO SUCCESSFUL
PROFITABLE STOCK-KEEPING

READY INSTANTLY: NO MIXING: NO TROUBLE.

The advantage of having the exactly right remedy at hand *just when it is wanted* cannot be overestimated. Delay may lose an animal.

DAYS' BLACK DRINK

The Original and Only Genuine. Beware of Imitations.

FOR COLIC, SHIVERING FITS, CHILLS, SCOUR, BLOWN CATTLE, etc.

An unfailing restorative and stimulant. Its prompt effect is frequently little short of marvellous; it directly SAVES LIFE in countless instances. Apart from the more serious illnesses in which it is so successful, a timely dose whenever an animal is off colour, lacking in tone, is prompt and effective.

Price **19s** per dozen bottles; per half dozen **10s**. Carriage paid.

DAYS' RED DRINK

THE GREAT COW DRENCH.

For Off Appetite, Indigestion, Loss of Cud, Costiveness, Hidebound, Chills and other common ailments of the shippon, **DAYS' RED DRINK** is a splendid and reliable corrective. It is the finest possible preparation for Calving. It prevents Milk Fever. Give every cow a dose before and after calving and the risk of serious Udder troubles is reduced to a minimum.

In large canisters with dose measure, **20s** and **40s**; packets at **12s** per dozen. Carriage paid.

THE UNIVERSAL MEDICINE CHESTS

Arranged for Horses and Cattle, for Horses only, for Cattle only, or in *any* way to suit patrons' individual requirement. We make it our special business, backed by nearly 70 years' unique experience, to supply medicine chests which are exactly right, containing just those remedies likely to be required, along with the clearest possible directions for use.

Prices **£1 4s**, **£2 4s** and **£5**. Carriage paid.

Readers are invited to write a postcard for most interesting Booklet gratis and free.

PLEASE NOTE THE ONLY ADDRESS:

DAY & SONS, CREWE, Ltd., CREWE.

JOURNAL

OF THE

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

JOURNAL

OF THE

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY

FOR THE

ENCOURAGEMENT OF

AGRICULTURE, ARTS, MANUFACTURES AND COMMERCE.

ESTABLISHED 1777.

FIFTH SERIES.

VOL. VIII.

1913–1914.

310357
IARI

WORK AND LEARN.

LONDON:
EDWARD STANFORD, LD., 12 TO 14, LONG ACRE, W.C.
1914.

[*All rights reserved.*

Price to Non-Members, Six Shillings.

" He that goes about to forward agricultural improvement must begin by finding out the true reason of what is called routine, or the 'custom of the country.' It sometimes happens that these reasons are only accidental, and then you may dismiss them fearlessly; but often it turns out that every-day practice rests on a solid foundation of facts; and then if you make an onslaught on local prejudices, they will be sure to beat you."

" The true course for the agricultural improver is, to take one step at a time, to gain a clear insight into facts by experience, not to try to go too fast, and to trust to the work of time."

" If practice which sets up to do without theory is contemptible, theory without practice is foolhardy and perfectly useless."—*From the Rural Economy of England, Scotland and Ireland*, by LEONCE DE LAVERGNE.

Journal communications should be addressed to the Editor,
3, *Pierrepont Street, Bath.*

CONTENTS.

VOLUME VIII.—FIFTH SERIES. 1913-1914.

ORIGINAL ARTICLES AND REPORTS.

PAGE

I. Edmund Rack: The Society he founded and the Company he kept 1
By **Thos. F. Plowman,** Secretary.

II. The Tuberculosis Order, 1913 39
By **Hugh Begg, F.R.C.V.S.**

III. The Plant as a Parasite 54
By **S. Leonard Bastin.**

IV. The Economic Selection of Fertilisers 63
By **John Hughes, F.I.C., F.C.S.**

V. Bees in Field and Garden 75
By **Harold Bastin.**

VI. Hints to Milk Producers 85
By **Thos. Milburn, Ph.D., N.D.A.**

VII. The Breeding of Cross-Bred Cattle 91
By **W. Nixon.**

VIII. The Society's Exhibition at Truro 94
By **Thos. F. Plowman,** Secretary and Editor.

IX. The Milk-Test Classes at Truro 99
By **Dr. J. A. Voelcker, M.A., F.I.C., etc.,** Consulting Chemist to the Society.

X. The Butter-Test Classes at Truro 102
By **A. F. Somerville,** Judge.

XI. The Exhibition of Cider at Truro 104
By **E. W. Farwell,** Steward.

XII. The Nature Study and Handicrafts Exhibition at Truro .. 106
By **H. M. Cundall, I.S.O., F.S.A.,** Steward.

PAGE

XIII. The Forestry Exhibition at Truro 110
By **Godfrey Lipscomb,** Steward.

XIV. Annual Report upon the Society's General Operations .. 112
By **Thos. F. Plowman,** Secretary and Editor.

XV. Investigations at the National Fruit and Cider Institute .. 116
By **B. T. P. Barker, M.A.,** Director.

XVI. Report of the Society's Consulting Chemist 149
(**Dr. J. A. Voelcker, M.A., F.I.C., etc.**).

THE NOTE BOOK.

Diseases Affecting Lambs and Young Sheep 151
The Petrol Engine 159
Change of Blood 162
Dairying in Germany 168
Swedes and Turnips 171
Tuberculosis and Milk 178
Winter Stabling of Horses 183
Cabbage Cultivation.. 186
Turkey Breeding 189
Sheep on Roots 191
Egg Hatching 193
Orchard Management 197
Soft Food for Poultry 201

THE FARMER'S LIBRARY.

1. British and Colonial Dairying 204
2. Dairy Technology 208
3. The Vegetable Proteins 209
4. The Farmer of To-morrow 210
5. A Text Book of Agricultural Zoology 211
6. Chemistry of Cattle Feeding and Dairying 213
7. The Agrarian Problem in the 16th Century.. 214
8. The Fertility of the Soil 216
9. Agricultural Arithmetic 218
10. Chemistry for Students of Agriculture, etc. 219
11. A Manual of Agricultural Chemistry 219
12. Bacteria as Friends and Foes of the Dairy Farmer 221

PAGE
13. Laboratory Methods in Agricultural Bacteriology 221
14. Farm Management 222
15. Animal Husbandry for Schools 224
16. The Corn Crops 225
17. Manures and Fertilisers 225
18. The Chemistry of Plant and Animal Life 227

APPENDIX.

TRURO MEETING, 1913.

Judges .. .. i-ii
Awards .. .. iii-lxxxv

PRIVILEGES, LAWS, OFFICERS, &c.

Objects of the Society and Privileges of Membership lxxxvi
Terms of Membership lxxxvii
General Laws .. .. lxxxviii-xc
Council and Officers .. .. xci-xcvi

List of Annual Exhibitions, 1852-1914 .. .. .. xcvii-xcviii
Chemical Privileges .. .. xcix-cii

SWANSEA MEETING, 1914.

List of Judges ciii
Prizes for Stock, Produce, &c. .. .. civ-cxxiv
Conditions and Regulations for ditto .. .. .. cxxv-cxxxiv
Prizes for Poultry .. .. cxxxv-cxxxvii
Conditions and Regulations for ditto .. .. .. cxxxviii-cxl

FINANCE.

Summary of Cash Account to December 31, 1913 .. cxlii-cxliii
Detailed Cash Account .. .. cxliv-clv
Assets and Liabilities Account clvi
Financial Result of Truro Show clvii

List of Members .. .. clviii-clxxxvii
INDEX clxxxviii

ILLUSTRATIONS.

Edmund Rack, Founder of the Society ... ... *Frontispiece*
The "Miller" Vase... ... ... *Following*
Doorway at 14, Alfred Street, Bath... ... ... *page 4*
The Old White Hart Inn, Bath ... ... *Following page 24*
Mistletoe ... ...
Broomrapes ... ...
Toothwort ... ...
Yellow Rattle ... ... *Following*
Dodder attacking Clover ... ... *page 56*
,, *a hold secured* ... ...
,, *a few weeks later* .. ..
European Toothwort ... .

Wings of a Humble-Bee ... ...
Part of the Fore and Hind Wings of a Humble Bee
Hive or Honey-Bee ... ...
Honey-Bee from side ... ...
Hairs of a Humble-Bee ... ...
Tibia and Tarsus of the Honey-Bee ... ...
Hind-Leg of a Humble-Bee ... ...
Ditto *Ditto* ... ... *Following*
Juncture of Tibia and Tarsus of Hind-Leg of Honey-Bee ... ... *page 80*
Stages in Fertilisation of Clover Blooms by Bees ...
Ditto *Ditto* ... ...
Humble-Bee ... ...
Flowers of Broad Bean ... ...
Ditto ... .

Plan of Truro Show Yard ... ... *Facing page 94*

The Mayor of Truro Inaugurating the Show ...
Group of Cornish Mayors at the Inauguration ... *Following page 96*
Street Decorations at Truro ... ...

Sweet Alford ... ...
Kingston Black ... ... *Following page 144*
Royal Wilding ... ...

Founder of the Society.
From a Portrait in the possession of the Society.
(Reproduced from a block kindly lent by the Proprietors of the "Bath Herald.")

JOURNAL
OF THE
BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

Original Articles and Reports.

I.—EDMUND RACK: THE SOCIETY HE FOUNDED AND THE COMPANY HE KEPT.

By Thos. F. Plowman, Secretary.

A TARDY REPARATION.

> "There is a history in all men's lives,
> Figuring the nature of the times deceased."

It is somewhat remarkable that there has never been any official record in the "Journal," or other of the Society's publications, of the life and work of the man to whom the Society owes its inception, and I venture to doubt if one in fifty of the present members could name him or say when or how the Society originated.

Ben Jonson said "Posterity pays every man his honour," but it must be admitted that payment is sometimes long-deferred.

Though somewhat late in the day, it seemed desirable to do something to rectify the omission in this case; hence this tardy tribute to the memory of one whom all connected with the Society must hold in honour.

It is, however, impossible to write about its founder without at the same time entering into particulars with respect to the origin and early work of a Society of which he was, for some years, and until his death, the moving spirit. Although this means a linking together of the quick and the dead—the Society having long survived its founder—the two subjects are too inextricably interwoven in retrospect to admit of separation.

Some additional justification for this amplification of the memoir may perhaps be found in the fact that no account of the Society's origin has previously been given in any detail. The world at large knows very little of the important work it carried out in the distant past, and is unaware how many men, distinguished in art, science, or literature, were either its active supporters or were helped by its encouragement of their efforts. From small beginnings, it became the promoter of large enterprises, and it gave a stimulus to agriculture at a time when the conjunction of science with practice was very much in its infancy, with the result that many improvements were effected.

Rack kept good company—that is to say company with a claim to distinction in the world of letters—both in connection with the Society with which he was so closely associated as well as outside it, and therefore this narrative would be incomplete if it did not embrace some reference to the circle in which he moved.

THE OLD MINUTE BOOKS.

"I gaze upon thee lovingly, old records of the past."

The Society's proceedings, both before and after Rack's death, as shown by the Old Minute Books, whence the materials for this memoir are largely derived, are so abundant in interest, and the Society's sphere of operations was so wide, that the difficulty has been to know where to stop in selecting extracts. In such selection, my endeavour has been to illustrate from these "abstracts and brief chronicles of the time," the varied phases of the Society's early work and the part that Rack played in its inception and execution. The attractiveness of the Society's transactions offered a strong temptation to carry on the narrative to later days, but limitations of space forbid this, and with Rack's death the story necessarily ends—at any rate for the present.

The arrangement of the information embraced by this article is, as far as possible, chronological, except where, for the sake of brevity, there has been a grouping of such subjects as could be properly included under one heading.

RACK, THE SELF-EDUCATOR.

Edmund Rack, although well-known and appreciated in his native Norfolk and in the City of Bath, especially in literary circles, had no such commanding personality, or such exceptional gifts, as would bring him into prominence in the world at large. Consequently, there are comparatively few records of his life and doings apart from his association with the Bath and West Society. With this paucity of material, any sketch of his life, outside the Society, must consist mainly of a piecing together of scattered fragments to be found in the newspapers and magazines of the period and sundry other publications. The son of Edmund and Elizabeth Rack, he was born at Attleborough in the County of Norfolk, in 1735, his father being a labouring weaver of good character and industrious habits. His parents were members of the Society of Friends, at whose Meetings his mother frequently preached, and he himself was brought up in and followed the same faith. He left school, after a very elementary education—his instruction there being practically limited to a knowledge of the three r's—at an early age, and was apprenticed to a general shop-keeper at Wymondham. When out of his time, he went to Bardfield, in Essex, and became a shopman to a Miss Agnes Smith, whom he afterwards married. After leaving school, he worked diligently to repair his educational defects, and, as his after-life showed, must have made good use of his time in this respect. He soon blossomed into a writer of essays, letters and poems, and Warner, the historian of Bath, described him as one who possessed "considerable talents and literary abilities." His early contributions appeared in such publications as *The Monthly Ledger*, *The Monthly Miscellany*, *The Farmer's Magazine*, and similar periodicals, under the *nom de plume* of "Eusebius." This is as much as is known of his life up to this point in it, except that he so far prospered in business as to have accumulated sufficient means to enable him to retire from it, and in 1775 he settled in Bath. He furnishes a good illustration of that wisdom which said :—"Every man has two educations—that which is given to him, and the other that which he gives to himself. Of the two kinds, the latter is by far the most valuable." It might be well if nowadays some of our educational reformers laid this more to heart when they are engaged in the process of overloading the curriculum.

His intellectual tastes no doubt had much to do with his selection of a future abiding-place, because the City at that period had a distinctly literary reputation. Anstey credited its springs with something more than healing qualities when he exclaimed :—

"Sweet are yon hills that crown this fertile vale !
Ye genial springs ! Pierian waters hail !"

Bath was resorted to by many who drank deep as well as by those who merely sipped at the Pierian Spring. Just previous to his arrival Rack had published a volume of poems, consisting, with some additions, of the best of those which had previously appeared in various periodicals, and this materially helped to obtain for him the *entrée* into literary circles ; hence he shortly found himself in an atmosphere very congenial to him.

LADY MILLER.

"The Muses haunt these hallow'd groves,
And here their vigils keep."

Bath, at that time the great resort of rank and fashion, attracted also many distinguished representatives of science, art and literature, as shown by the residents' and visitors' lists and the roll of those who associated themselves with the Bath and West Society in its early days. At that time there were many little literary coteries meeting at frequent intervals for discussion and for the purpose of stimulating budding authorship to a display of its powers. Among the most famous of such gatherings were those held under the auspices of Lady Miller, a well-known blue-stocking, of the type immortalised by Dickens in the Mrs. Leo Hunter of the "Pickwick Papers." Rack, shortly after his arrival in Bath, came within her ken, and responding to her invitation to join her circle soon became a prominent member of it, and took an active part in what were known as her ladyship's "poetical revels," held at her residence at Batheaston, near Bath. Ability in versification was an "open Sesame" to these gatherings, at which the guests were expected to display their ability in the production of *bouts rimés* and other poetical vivacities, their contributions being afterwards printed. Rack, was just in his element when joining in such recreations, and several of his tributes of verse appear in the printed collection entitled "Poetical Amusements" which recorded the efforts of her ladyship's guests.

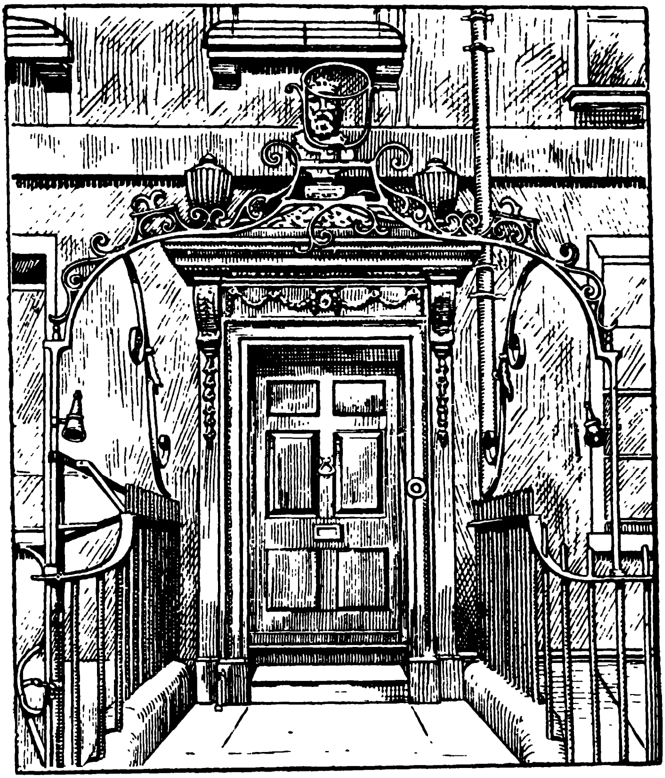
These reunions were held fortnightly and had sufficient vitality to last for a period of about twelve years. Prizes were awarded for the best compositions, and among the competitors were Garrick, the actor; Richard Graves, the novelist and poet, who was rector of Claverton at the time; Captain Anstey, the author of the immortal "New Bath Guide"; Miss Seward, the "Swan of Lichfield"; S. J. Pratt, first a cleric, then actor, poet and playright; and other celebrities, so, that, despite the artificiality of the proceedings, they managed to attract not a few notable people. As Anstey puts it:

"From water sprung, like flow'rs from dew,
What troops of bards appear!"

Mme. D'Arblay, in her Diary and Letters, says, "Nothing is more tonish than to visit Lady Miller, who is extremely curious in her company, admitting few people who are not of rank or fame, and excluding all of those who are not of character very unblemished"; and Graves says, "I counted one morning above fifty carriages drawn up in a line from Bath Easton towards Lambridge; and was

THE "MILLER" VASE NOW IN THE ROYAL VICTORIA PARK, BATH.

(Reproduced from a Block kindly lent by the Proprietors of the "Bath and Wilts Chronicle.")



The fine old doorway at No. 14, Alfred Street, Bath, where Mrs. Macaulay resided (opposite the famous Assembly Rooms), showing the extinguishers used by the link boys in the old days.

(Reproduced from a block kindly lent by Messrs. Evans and Owen, Ltd., the present owners of the house.)

at one time present at it with four duchesses, the duchess of Cumberland, Northumberland, Ancaster and Beaufort." The verses resulting from these gatherings were not unnaturally regarded as fair targets for satiric shafts, and Johnson said he "held them very cheap," whilst Sheridan, writing with reference to a present he had received, said "I believe I shall try a little jingle on the occasion; at least a few such stanzas as might gain a cup of tea from the urn at Batheaston." The "Poetical Amusements," which were published for the benefit of charity, justified themselves in one respect, for the entire edition of the first volume was bought up in ten days and had to be reprinted. Horace Walpole, who was on friendly terms with the Millers, says of them "They hold a Parnassus fair, give out rhymes and themes, and all the flux of quality at Bath contend for the prizes. A Roman vase, dressed with pink ribands and myrtles, receives the poetry, which is drawn out every festival; six judges of these Olympic games retire and select the brightest competitions, which the respective successful competitors acknowledge, kneel to Mrs. Calliope, kiss her fair hand, and are crowned by it with myrtle." Walpole, although he had enjoyed the hospitality of the Millers, wrote a good deal about them and their doings in a satiric vein, but his account, as given above, of the revels, is borne out by Graves, who similarly described them. When the compositions were drawn out of the vase, they were read aloud to the assembly—a somewhat trying ordeal one would imagine, for the writers; unless frequenters of garden-parties were then much more poetical than they are nowadays.

Her ladyship's husband was Captain, afterwards Sir John, Miller, but he does not loom so large upon the scene as his wife, though he derives a lustre from his associations in that he occasionally dined in town with Dr. Johnson. Lady Miller died in 1781 and was buried in Bath Abbey, where there is a handsome marble monument, sculptured by the elder Bacon, erected to her memory with a eulogistic epitaph in her honour. The vase which figured at the gatherings referred to was an antique dug up near Cicero's villa at Frascati in 1759. It was purchased by Sir John, when he and her ladyship were touring in Italy, and became one of the adornments of their Batheaston garden. It has survived until now; its present resting-place being the Royal Victoria Park at Bath, where it is depicted in the accompanying illustration.

MRS. MACAULAY.

Another worshipper at the shrine of the Muses was Catherine Macaulay, who lived in Alfred Street, Bath, where she took up her residence after the death of her husband, Dr. George Macaulay, a London physician, and where she wrote the greater part of her "History of England." Regarding Rack as a kindred spirit, she included him within her select circle. She was extremely handsome and so had many admirers, but she was a singular compound in other respects as she aspired to be both a leader of fashion and an ardent republican at one and the same time. Her "history" has deservedly passed into oblivion, for it was too rancorous and one-sided to be worthy of a better fate. She replied to more than one of Burke's political pamphlets, and, in her turn, was mercilessly attacked in print by Philip Thicknesse. Rack was a welcome guest at her gatherings and took a prominent part in some elaborate celebrations in 1777 in honour of her birthday. He edited a pamphlet recording the proceedings on that occasion and composed one of the odes recited in her honour. The adulation lavished upon the lady in question may be judged from the prefatory "argument" of the record (supposed to have been written by the Rev. Dr. Wilson, her most ardent admirer) which runs as follows:—"Apollo, having convened an assembly of the celestials proposes this question, viz., on whom, among the present race of authors, can the wreath of honour be conferred with the greatest propriety? Pallas, Mercury and the Genius of Liberty all join in recommending a justly-celebrated female historian as best entitled to the prize. Apollo approves their choice, bids them confer the intended honour and tells them Fame shall proclaim this decision and Public Virtue erect an imperishable column to her memory." The Doctor publicly indulged in such effusive demonstrations of his admiration for the subject of his panegyric as led to the supposition that he must have lost his head as well as his heart in the cause, but his infatuation came to a full stop when the object of his adoration suddenly transferred her affections to a well-favoured young Scot, just turned twenty-one, to whom she united herself at the age of fifty. She had the distinction of being painted by Gainsborough and of attracting the attention of Dr. Johnson, who, when visiting at her house, had his feelings so lacerated by her republican notions, that at last he exclaimed—"Madam, I am now a convert to your way of thinking. I am convinced that all mankind are upon an equal footing, and to give you an unquestionable proof, madam, that I am in earnest, here is a very sensible, civil, well-behaved fellow-citizen—your footman. I desire that he may be allowed to sit down and dine with us." Like Gilbert's Sir Joseph Porter, her passion for levelling had its limits, and Johnson and she parted company once and for all. That there was no love lost between them after this is evident from the statement in Boswell's Life of the great lexicographer that when the latter heard that the lady in question, having become very fond of dress, sat for hours together at her toilet and even put on rouge, he remarked "It is better she should be reddening her own cheeks than blackening other people's characters."

The artificial sentimentality pervading much of the art and literature at this period was reflected in such gatherings as those referred to, whose affected dilletantism was very typical of a certain section of Bath society. At the same time, it must be admitted, that the doings of such literary votaries compared favourably with those of other representative circles existing mainly for gaming and scandal. It must not be supposed, however, that Rack, although he mingled with the throng of fashionables which beguiled itself with these ephemeral literary pastimes, was attracted solely by them. He was something more than a skilful versifier, and was far from being a mere Society butterfly, as was testified to by such works of his as "Mentor's Letters addressed to Youth," "England's True Interest in the choice of a Parliament," and "Reflections on the spirit of Christianity."

A LINK WITH THE PAST.

Rack had devoted some attention to agriculture before he left his native County, and the fact that he was born and bred in Norfolk may go far to account for the interest he had in farming. The late Sir Jerom Murch, so long an honoured and active member of the Society's Council, writing in the "Journal" in 1891, said:—"Everybody acquainted with that County (viz., Norfolk) knows how well versed its cultivators were, and still are, in farming matters. When I lived there sixty years ago Mr. Coke, afterwards Earl of Leicester, was enjoying a green old age in the midst of the beautiful farms he had created out of a vast rabbit-warren. I used to hear of the rides he took every morning before breakfast, now looking in upon one tenant and now upon another, each one prosperous in consequence of his own generous spirit and noble example. No theme was then more common than his annual sheep-shearings, at which Holkham was crowded by the elite of the agricultural world and by intelligent tenant farmers who, year by year, carried back to their homes incentives of the greatest practical value to 'work and learn.'"

Coke was born a year before Rack, and he died within the lifetime of Sir Jerom. So here we have a very interesting and long-drawn-out link with the past, for both Rack and Sir Jerom were Norfolk men who settled and died in Bath; both were closely identified with the Society and were contributors to its "Journal"; and, while one founded the Society, the other presided over it when the centenary of its birth was celebrated. The intervening space between two notable lives was bridged over by Coke, who joined the Society in Rack's time and thus forged a chain connecting a distant past with a present in which developments count far more than years.

RACK AND THE SOCIETY.

Rack's successful endeavour, with which his name is inseparably associated, to lay the foundations of the Society represented by this "Journal," affords conclusive evidence of the serious bent of his mind, whilst his far-sightedness is shown by his discernment of the need for such an organisation, and his pertinacity of purpose by the untiring energy he brought to bear in carrying out his intention. Whilst the main object he had in view was the promotion of Agriculture especially, he had, as will be seen, the furtherance of much more than this, for he realised the need at a particular juncture, of a combination, somewhat wide in its aims, which would knit men together in a common effort to assist the acquisition and diffusion of such knowledge as was conducive to the general welfare of mankind.

Rack, previous to his arrival in Bath, had contributed articles on Agriculture to the *Farmer's Magazine*, and was sufficiently informed upon the subject to be able to realise the backwardness of the West in farming matters. This led to his conceiving the idea that Western methods might be improved through the medium of a society specially formed for the purpose of diffusing knowledge on the subject and of encouraging those engaged in the industry. It was not an entirely novel proposal, because agricultural societies were already in existence in Norfolk, Yorkshire and elsewhere, but their life was comparatively short. Rack, however, succeeded in founding a Society which at the present time is senior in point of age to any other in Great Britain, although, in length of days, the Royal Dublin Society takes precedence of it, having been established in 1749. The Highland and Agricultural Society of Scotland had no continuous existence previous to 1784 and the Royal Agricultural Society of England was not born until 1838. It should be mentioned, however, that when the Society of Arts was first established in 1754, it took Agriculture under its wing, and was, in fact, for some years, mainly an Agricultural Society, rendering very valuable help to the industry. In course of time its attention was directed to other subjects more urban than rural in character, and it was content to leave Agriculture to the other agencies which had in the meantime come into existence.

One could hardly have supposed that the City of Bath, at that particular time, the seat of gaiety and fashion, would have lent a very attentive ear to anything so essentially practical, and so far removed from the ordinary frivolities of the place, as Rack's proposal represented. But a pioneer with his enthusiasm is not easily daunted, and, beyond this, the time was not unfavourable, so far as the kingdom generally was concerned, for many societies for the encouragement of art, science and literature were springing into life. Dr. Priestley was throwing light upon the influence of the gases and the part they play in the economy of plant life; James Watt had patented his steam engine and applied it to practical use: Sir Joshua Reynolds, a West of England man, had projected the Royal Academy and secured the ægis of royalty for it. It was a time of sowing the seeds of much that eventually revolutionised the conditions under which the world lived, and this promulgation of new creeds and new ideas induced men to combine with the object of expounding and advancing them.

Rack developed his plan in a series of letters to the *Farmers' Magazine* and *Bath Chronicle*, in which he pointed out that it was to the interest of the farmer, the landowner and the nation at large that the resources of the country in connection with agriculture should be increased. He also advocated the giving of pecuniary and honorary rewards to "the diligent and ingenious who have excelled in the various departments of husbandry, in useful manufactures, and in the most curious specimens of art." Acting upon this, he cast his net wide enough to enlist the sympathies of others besides those engaged in farming, and when he felt that his letters had attracted sufficient attention to justify a definite and forward movement, he penned the following advertisement which appeared in the *Bath Chronicle*:—

AGRICULTURAL SOCIETY.

To the Nobility and Gentry in the Counties of Somerset, Gloucester, Wilts and Dorset in general, and the Cities of Bath and Bristol in particular.

Bath; Aug, 26, 1777.

A Proposition having been made for the institution of a Society in this City for the encouragement of Agriculture, Planting, Manufactures, Commerce and the Fine Arts, the Nobility and Gentry are hereby respectfully informed that a Meeting will be held at York House, on Monday, the 8th of September, at Eleven o'clock in the forenoon, to take the affair under consideration.

And that the plans on which Societies of this kind in London, Norwich, Manchester, etc., are founded, with some other necessary materials, will then and there be produced; in order that one General Plan may be formed for establishing a Society here on a proper foundation, and a subscription opened for carrying it on with a spirit becoming the dignity of so honourable an institution, and its great importance to the community.

As this institution is intended for the benefit of all the above-named Counties, it is humbly requested that the public-spirited Gentlemen residing therein will generally honour it with their countenance and protection.

THE SOCIETY'S FIRST MEETING.

The Meeting was duly held on the date named, and it seems worth while to reproduce the account of it, given in the first of the old Minute Books, as it exactly sets forth the origin of a Society which has not only lasted for nearly one hundred and forty years, but has attained dimensions undreamt of by its originator. The modest way in which it came into life is shown by the small number, twenty-two in all, who responded to the invitation to attend. The following is a copy of the Minutes of the Meeting:—

YORK HOUSE, Sept 8th 1777

At a Meeting held this day for the establishment of a Society for the encouragement and improvement of Agriculture, Manufactures, Commerce and the Fine Arts, in the Counties of Somerset, Wilts, Gloucester and Dorset.

PRESENT.

John Ford Esqr in the Chair,

Revd. Dr. Wilson
Revd. Mr. Ford
Dr. Wm. Falconer
Dr. Patrick Henley
Wm Brereton, Esq.,
Mr. Saml Virgin
Mr. Richard Crutwell
Mr. Foster, Apothecary
Mr. Cam Gyde
Mr. Benj. Axford
Phillip Stephens, Esq.,
Paul Newman, Esq.,
Mr. John Newman
Willm. Street, Esq.,
Mr. Symons, Surgeon.
Mr. Crutwell, Surgeon.
Mr. Arden
Mr. Wm. Mathews
Mr. Parsons
Mr. Edm. Rack
Mr. Bull.

The advertisement for holding the said Meeting, and a variety of other Materials, being read, it is unanimously resolv'd,

1. That the Gentlemen now met together with the Noblemen and others whose names are entered in the Subscription Book, do constitute a Society for the above-mention'd purposes, and that the said Society is by this resolution established.
2. That it is necessary immediately to appoint a Secretary to transact the business of the Society; and that it is the unanimous request of this Meeting that Mr. Edmund Rack of Bath do accept the office—Mr. Rack having agreed thereto, is accordingly appointed.

3. That the Thanks of this Meeting be given to Mr. Cam Gyde for the unsolicited offer of his Rooms for the future Meetings of this Society.
4. That the first Meeting of this Society shall be held at Mr. Gyde's Rooms on Fryday the 19th instant at nine o'clock in the Morning, and that the presence of the Nobility and Gentry be, in a circular letter, earnestly requested, to patronize this laudable and honourable Institution.
5. That, previous to the Meeting of the 19th instant, the Members now present shall resolve themselves into one General Committee, to whom the plans and other Materials now produced shall be referr'd, and that the said Committee shall form from the whole, *One General Plan* to be laid before the next Meeting for its approbation: any five of the said Gentlemen to be a Quorum; and that the said General Committee shall meet at Mr. Gyde's Rooms on Monday the 15th instant at 11 o'clock in the forenoon.
6. That in order to expedite the business of the above named Meeting, Dr. Wm. Falconer, Mr. R. Crutwell, Mr. C. Crutwell, Mr. Wm. Mathews, together with the Secretary, be a sub Committee to make the necessary previous preparation.
7. That the Secretary, at the request of this Meeting, do immediately form, and cause to be printed and dispersed throughout the above Counties a Sketch of the Institution for general information.
8. That these resolutions together with the names of the present List of Subscribers, be published in the Bath, Bristol, Salisbury, Gloucester and Sherborne Papers.

Sign'd by Order of the Meeting
Edmund Rack, Secretary.

In the list of those present, it is curious to note the discrimination exercised in the status accorded to individuals, some being styled "Esquires" whilst others were described as "Misters." It was likewise considered necessary to expressly specify that one was an apothecary and two were surgeons, these being classed as "Misters." There is also a self-satisfied quaintness in the appeal for patronage of "this laudable and honourable institution"; and the fixing of 9 a.m. for a Meeting shows a confidence in the early-rising proclivities of "the nobility and gentry" which I fear might not be so generally entertained nowadays.

The Dr. Falconer, whose name appears among those present, was the distinguished-physician and literati. He was a fellow of the Royal Society and a man of most remarkable attainments. He was the author of many works upon such diverse subjects as medicine, surgery (which were matters to which he specially devoted himself) science generally, religion, politics and classics, his versatility being almost unbounded. After an active career, as a physician, in London, he settled in Bath and became physician to the General (now the Royal United) Hospital here. He lived in the Circus where he died in 1824.

THE SCHEME APPROVED AND THE SOCIETY LAUNCHED.

The Committee appointed for the purpose, having drawn up a plan of operations submitted it to a Meeting of those interested. This Meeting was held on October 19th, 1777, at Mr. Gyde's Rooms, but was not very largely attended only eighteen persons being present. Dr. Falconer was in the Chair. The Committee's plan, "having been twice read and deliberately consider'd," was, with some alterations agreed to and was ordered to be laid before a General Meeting in November for "approbation and confirmation."

At this same Committee Meeting a letter was read from Dr. Alex. Hunter, of York, who was not only an eminent physician and scientist but also one of the founders of the YorkshireAgricultural Society. Like Dr. Falconer, his versatility was remarkable, for his contributions to literature include works on medicine, geology, zoology, botany, agriculture, and even cookery, whilst, as crowning evidence of the diversity of his powers, he finished up, in his old age, by giving to the world a collection of maxims under the title "Men and Manners; or Concentrated Wisdom," which was so successful that it quickly ran through three editions. He was a fellow of the Royal Society (London) and also of the corresponding Society of Edinburgh, and later on was an honorary member of the old Board of Agriculture presided over by Sir John Sinclair.

In his communication, he says: "I rejoice when I see publick spirit exerted to publick use, and shall be happy to contribute everything in my power towards strengthening your Society." He also dwells upon the desirability of the Society publishing such information as it can obtain upon matters within its sphere, and this suggestion was acted upon, as testified to by the many volumes it issued, under the title of "Letters and Papers," ancestors of the present "Journal" of the Society. The opening series commenced in 1780, and supplied the first instance of an Agricultural Society giving its transactions to the world in this way. In this connection, Arthur Young, in an article he contributed to the Society's published Transactions in 1781, emphasised the advantages of publication as follows:—"A Society that does not publish its transactions may be of a partial, limited and confined utility, but can never diffuse the knowledge it rewards, nor render the successful efforts of individuals the means of general improvement."

The receipt of such a communication from so recognised an authority in similar matters as Doctor Hunter was evidently very pleasing to the Committee, who resolved that it should be entered on the Minutes and suitably replied to. The Secretary's reply is a very good example of the epistolary style of the period. After expressing his sense of the honour it is to address the doctor and the Society's indebtedness for his "very polite letter," he goes on to say:—" An offer of assistance from a Gentleman of Dr. Hunter's abilities and knowledge in the various subjects to which its views are extended cannot fail of being highly acceptable to this Society. The hints your letter contains respecting our mode of proceeding were received with pleasure and considered as a mark of your attention which merits our very grateful acknowledgment. We shall be happy in receiving anything which you may think adapted to the infant state of our Society, whenever you may be pleased to communicate it."

The General Meeting, at which the Committee presented their report, was held on November 13, 1777, under the Chairmanship of the Sir John Miller (previously mentioned in connection with the Batheaston revels), thirty-nine persons being present. A good deal of practical business was transacted which fairly launched the newly-formed Society upon its career. Lord Ilchester was elected as the first President and a dozen Vice-Presidents were nominated. Separate Committees were appointed to deal with Agriculture and Planting, Correspondence and Enquiry, Manufactures and Commerce, and Mechanics and the useful Arts. The rules and orders having been considered, the Meeting adjourned till the following morning, when it completed its business in this respect. At the same Meeting, the Minutes record, that Mr. Arden " made an unsolicited offer to the Society of the use of his very complete apparatus of Philosophical Instruments, for the making any experiments tending to promote their designs," which was gratefully accepted.

PREMIUMS.

At a General Meeting of Members held on December 9th in the same year, the Hon. G. W. Fairfax, one of the Vice-Presidents, in the Chair, in addition to other business, the premiums to be offered by the Society were considered, and these are very interesting as showing how cosmopolitan were the aims of the promoters.

Forty-nine premiums ranging from One Guinea to Thirty Guineas were offered, and, briefly epitomised, they were to be awarded for raising most of the principal farm crops; for rearing agricultural stock; for planting different sorts of trees; for a remedy for destroying the fly in sheep and for a method of marking the wool of the latter without injuring it; for various implements and machines used in agriculture; for length of service on the part of both men and women; for an essay on improvements in agriculture; for producing the greatest increase of malt; for burning and collecting the greatest quantity of ashes from fern and weeds; for extracting oak-bark for tanning leather and for producing the best hide tanned with it; for a method of rendering hard water soft; for introducing the manufacture of Black Silk Lace, where it had not previously been made, within the Society's area, and to the woman who made the greatest quantity; for the improvement of Spinning Jennies; for introducing the spinning of woollen yarn, and to the woman who spun the greatest quantity; for a method of winding long-skeined silk; for a portable crane; for an apparatus for destroying noxious vapours in coal mines and for producing sufficient light to work them; for the greatest quantity of good writing paper made without linen rags; and for a method of preventing boots and shoes from imbibing moisture in wet weather.

The above represents a fairly extensive programme to start with, but it embraces only a selection from the premium list. It will, however, sufficiently indicate the original objects of the Society and the zeal and earnestness with which its promoters set about their work. It was hardly to be expected that there would be claimants in every case for the premiums, but they undoubtedly stimulated many persons in various walks of life to action, and provided good food for discussion.

APPOINTMENT OF SECRETARY AND TREASURER.

As will have been seen, Rack was appointed Secretary at the first Meeting of the Society, and at the Annual General Meeting of Members held in the following January, it was resolved that he be paid fifty guineas per annum to commence from the first meeting "till the Society shall be better able to increase that sum." It was further resolved that he be paid thirty pounds per annum for the use of sundry rooms in his house.

Shortly after, the question of a Treasurer arose when it was found that the Bath City Bank, the Bath Bank and the Bath and Somerset Bank were all subscribers of an equal amount, so it was resolved that the name of each "be written on a separate piece of paper, equally roll'd up, put together in a hat, and separately taken our by the Secretary, the firm first drawn out to be the Treasurers for the first year; the second for the second year; and the remaining third for the third year." The draw placed the Banks in the order given above, and the City Bank became the Society's first Treasurer.

THE SOCIETY'S PRACTICAL APPLICATION OF ITS PRINCIPLES.

The assiduity of the members and the thoroughly practical way in which they set to work to carry out the objects of the Society were remarkable, and frequent Meetings were held.

The foundations of a library were laid; the first list of books for purchase, consisting mainly of agricultural and botanical works. included a copy of Evelyn's "Sylva," Most of the books then and afterwards acquired are still in the Society's possession.

In June, 1778, the Society took a very important step in the issue of an appeal to the High Sheriffs of Counties for information. The following circular embodying the request is interesting at this distance of time, as it so clearly sets forth what was in the minds of the original promoters of the Society.

From the Committee of Correspondence and Enquiry,
Appointed by
The Bath Agriculture, &c. Society.

Sir,

A Society being established in the City of Bath, for the Encouragement of Agriculture, Arts, Manufactures and Commerce, in four of the Western Counties, we beg leave to submit the following remarks to your consideration—

Some of the principal objects of this Society's Attention are,

To excite by premiums a Spirit of Emulation and Improvement in such Parts of Husbandry as seem most to require it.

To endeavour that the annual Produce of Corn be increased by bringing into Cultivation in the least expensive and most effectual Manner, such Lands as are at present barren or badly cultivated, particularly by draining and manuring; and by the introduction of various kinds of vegetable Food for Cattle.

To promote the knowledge of Agriculture by encouraging and directing regular Experiments on those Subjects which are of the most Importance to it, and by distributing Rewards to such persons as shall raise the largest and best Crops of Natural and Artificial Grasses, and the several species of Grain, on any given quantity of Ground.

To encourage planting on waste Lands, raising Quick-Hedges, cultivating Turnips, Carrots, Scotch Cabbage, &c. &c.

To promote all improvements in the various Implements belonging to the Farmer, and introduce such new ones as the Experience of other Counties has proved more valuable than those generally in use.

In order to accomplish Ends so desirable and advantageous to the Community, it will naturally occur to you, as it hath to us, that a general knowledge of the best Modes of Practice in all the different parts of this Kingdom, is indispensibly necessary. Convinced of this the next Object of our Consideration was how to obtain such knowledge; and, after a Variety of Methods having been proposed and deliberately considered, the following were unanimously adopted, as most conducive to that end,—to wit,

" Firstly, That a List of Queries relative to the Most important Branches of " Agriculture, Planting, and Rural Affairs, And the various modes of husbandry, " should be drawn up and Answers to them requested from every County in " this Kingdom.

"Secondly, That as this Society knows not the Persons to whom the said
"Queries might with the greatest Propriety be sent, a circular Letter (inclosing
"the said Queries) should be respectfully addressed to the High Sheriff of
"each County, requesting the favour of him to send them to some Person or
"Persons, whom he deems qualified to answer them from practical Experi-
"ence and transmit such Answers as he may receive, to the Secretary of the
"Bath Society:

We conceive that Answers to the inclosed Queries, from Men of Experience and practical Knowledge in the different Counties would be a Source of valuable Materials, from which some general Principles might be drawn, of great Utility to the Public:

Therefore, we hope the Importance of the Objects we have in View, and the probable Advantages arising to the Community from the successful Prosecution of so laudable a plan, will render an apology for the trouble we are giving you needless; and that you will be kind enough to procure, and transmit to us, as soon as you conveniently can, the information we now take the liberty to request.

We address you, as Gentlemen of Public Characters and Liberal Minds: and doubt not your ready Concurrence in thus promoting so laudable and honourable an Institution.

Signed on behalf, and by Order of the said Committee,

THOMAS CURTIS, CHAIRMAN

P.S. Direct to E. Rack, Secretary, in Bath.

Read and approved at a General Meeting of the Society June 16, 1778, and signed on its behalf by

E. RACK, SECRETARY.

This appeal for information was very fully responded to by several Counties, and many useful particulars were thereby supplied for publication in the Society's "Letters and Papers."

At the onset there appears to have been some slackness in the matter of attendance at Meetings, as well as a lack of punctuality, and so the following quaint resolution was passed as a stimulant:—

"Whereas sundry Members of this Society, residing in the four Counties have not yet attended any of the meetings, it is respectfully recommended to such that they attend in future as often as their other engagements will permit:—and such of the Members as reside in and near Bath, especially those who are on the several Committees, are entreated to consider that the loss of their assistance must be felt both in Committees, and Genl Meetings:—And as the hour of the said General Meetings is 11 no small advantage would accrue from the members attending as nearly as possible to the time appointed."

One can see in this the hand of the Secretary, whose ardent soul must have been vexed at any falling off in enthusiasm on the part of the members.

Rack had managed to enlist the sympathies of the Rev. Dr. Wilson, already referred to as the admirer of Mrs. Macaulay, and he not only attended the meetings but addressed to the Society what in the Minutes is described as "a very judicious and sensible letter," which not only secured him a vote of thanks but the additional compliment of an order for it to be printed for the benefit of the members. It is really a long-winded series of admonitions delivered with ponderous verbosity, and in this respect does not compare favourably with the generality of the communications made to the Society.

IMPLEMENTS.

The germ of that department of the Society's Show which has attained to such large dimensions in later times is to be found in an announcement made in March, 1778, that Blancher's drill plough was on exhibition at the Society's rooms, and the Agricultural Committee reported that it had been "tried and found to deliver the grain with great exactness and regularity."

In 1782, the value of improved implements was recognised in another way, for it was resolved that, in some cases, instead of money, silver cups or other pieces of plate, the premiums should consist of "ploughs or other improved implements in husbandry of established utility, inscribed with the claimant's name and the improvement for which it is given."

Improvements in agricultural implements frequently occupied the Society's attention, but a great obstacle to the use of new machinery was the prejudice against it of farm-servants, who fancied it would tend to the reduction of human labour. They had also a general disinclination to adapt themselves to the change that was beginning to influence the whole system of industrial occupation in England.

Billingsley, writing upon this subject says :—

> "Vigorous attempts have been made by the Bath Society to introduce the Norfolk and other ploughs, calculated not only to expedite the work but to render it less expensive, and their endeavours have been attended with no inconsiderable degree of success ; yet I may say that not one farmer in 500 has followed the example, though many of them daily receive ocular demonstration of their own ill-constructed ploughs. To what can this blindness and obstinacy be owing ? The farmers are quick-sighted enough in other matters wherein their interests are concerned. I am therefore inclined to think the fault lies more with the ploughman than the master, whose indolence induces him rather to accommodate the plough to the man than to exert himself in making the man accommodate himself to the plough."

EXTENSION PROPOSALS.

At a meeting held on September 8, 1778, it was suggested that the County of Hereford should be included in the Society's plan, and the Secretary was directed to communicate with the principal gentlemen in that County upon the subject: and a little later on it was resolved to extend the operations of the Society to the Counties of Berks, Hants, Devon and Cornwall, should these Counties so desire.

EXPERIMENTAL FARM.

In February, 1779, the Society made a practical advance in acquiring a farm upon which experiments could be conducted under its own direction. This was determined upon because, as the Minutes record, "such a spirited extension of the original plan will be greatly conducive to the interests and honour of the society and best promote the grand ends of its institution, namely the acquiring and circulating such experimental knowledge in Agriculture as may prove of the greatest importance and advantage to the public." It will be seen that there was no mock-modesty about the Society's pioneers in recording their aspirations and achievements, but such whole-hearted yet simple-minded eulogy disarms criticism. In the Spring of 1780, it was resolved, on Rack's recommendation, and after he had examined the site, to take over ten acres of land then under fallow and consisting of various kinds of soil and situation, attached to the farm occupied by Mr. Bethel, of Weston, and to entrust the conduct of the experiments to him under the supervision of a Committee. Experiments upon crops especially were then at once commenced and were successfully carried on for some years. It was the first experimental farm in this country, and was a worthy precursor of Woburn and Rothamsted.

PLANT EXAMINATION.

The following Minute included in the Society's proceedings on February 9, 1779, affords an instance of the thoroughness with which the Society conducted its investigations and of the painstaking zeal of Rack:—

> "Letter 116 recommending a List of all the Plants eaten or rejected by cattle in this Country to be made, having been read and considered, we are unanimously of opinion that the subject in general and the experiments it so particularly recommends are important, and well worthy the attention and encouragement of this Society. Which report being read and considered, this meeting agrees thereto and is of the opinion that as the Secretary has already formed into a regular and concise table near 500 of the Experiments made by Linnæus on plants common to the Country (for which our thanks are voted him) the extending these experiments to the rest of the indigenous plants in England would be an undertaking very beneficial to the public and not so difficult a task to accomplish as at the first view it may appear to be. The said Committee are therefore directed to consider what may be the best mode of carrying this plan into execution and report at some future meeting."

The result of this was the preparation of a very extensive list.

RACK'S INGENUITY.

Although agriculture monopolised by far the largest share of the Society's attention, the other objects it had in view were not lost sight of, and an instance of this, and of Rack's ingenuity, is to be found in a Minute of April 13, 1779, which reads :—

> " The Secretary having proposed several considerable improvements in the form of the hammer commonly used by labourers in breaking stones on the Turnpike roads this meeting directs him to get such a hammer made as he thinks best adapted for ease and expedition and produce at our next meeting, and his letter thereon is referred to the Committee on Mechanics."

In the following June, Rack produced his hammer which was highly approved, and it was resolved to have several made according to this pattern. These Sir John Miller was requested to bring under the notice of the Turnpike Commissioners, to whom, later on, the Society submitted an improved wheel-barrow and spade for their inspection.

Shortly after this, Rack reports that he has been experimenting with Mr. Redman's " machine for cooking with charcoal and finds it to answer extremely well in every respect." The meeting therefore recommended it for general use, " not only in private families but at the camps to which latter it seems peculiarly well adapted, and directs the Secretary to write a letter to Mr. Redman expressing the Society's approbation and wishes to promote its general use."

A machine for " giving light in coal mines without kindling the vapour " came under investigation, and, appearing well calculated to answer its purpose it was placed in the Society's rooms for inspection and trial by any gentleman concerned in Coal Mines ; whilst a guinea was awarded " as an encouragement for his ingenuity " to the inventor of " a machine for the preservation of persons who may be shipwrecked."

PRACTICE *v.* THEORY.

Agriculture all this time was approaching its transition stage, when there was an awakening to the fact that the discoveries of science and the practical application of chemical principles, should be brought to bear. The Society early realised this, and on October 10, 1779, a Minute states that :—

> " In order to ascertain in the clearest and most decisive manner the superiority of the Newly improv'd to the Old mode of Farming the Society recommends in the strongest terms to Experienced Gentlemen and practical Farmers in the several Counties, that they would draw from real facts and Experiments,

a Comparative estimate of the success attending each, on the three grand Divisions of soil, to wit, poor sand, rich loam and strong clay—fairly stating the different expenses upon each through the usual course of crops, and the real produce. This they conceive would be of more essential service to the public than whole volumes of theory."

THE PRESIDENCY.

At a General Meeting on January 11, 1780, Lord Ilchester tendered his resignation of the Presidency, which he had held from the first, and it was accepted. He was succeeded by the Earl of Ailesbury.

RACK'S PORTRAIT.

At a General Meeting held on October 9, 1781, Sir Cæsar Hawkins, in the chair, the Minutes record that "Mr. Vaslet having presented this Society with a half-length Portrait Painting of the Secretary, finely executed in crayons, this Meeting vote their thanks to Mr. Vaslet on the occasion, and unanimously elect him an honorary member of this Society."

This portrait, which has distinct merits as a work of art, is happily still in the Society's possession and adorns its offices in Pierrepont Street; it is supposed to be the only portrait of the founder in existence. The artist, Lewis Vaslet, was a miniature-painter of some note, who practised first at York and afterwards, viz., from 1778 to 1805, at Bath. He was an occasional exhibitor at the Royal Academy. A reproduction of the portrait faces the title-page of this volume, and Austin Dobson must have had just such a costumed embodiment of the past in his mind when he wrote :—

"He wears a brown Old Brunswick coat,
With silver buttons,—round his throat
A soft cravat; —in all you note
An elder fashion."

LAND EXHAUSTION.

Virgil in his Georgies expresses his belief in the fertility of the soil and in the efficacy of "muck" when he says :—

"Yet in alternate years you need not fear
With profitable toil these crops to rear,
If with a liberal hand you spread the fields
With the rich compost which the stable yields."

In relation to this, the Society, in 1782, bestowed a good deal of careful consideration upon the subject of the Chemistry of vegetation, and a list of queries was sent round to scientific men in various parts of the Kingdom. Among the questions asked was—"Does the earth, by the growth of vegetables, lose any particles necessary for future vegetation?" The answer to this of Mr. Joseph Wimpey, of Manchester, is worth noting in view of the fact that it was written before Sir Humphrey Davy had given the world his agricultural chemistry and before the age of artificial manures. Wimpey said:—"That the earth, by the growth of vegetables, does lose certain particles necessary for further vegetation, is a fact well-known to every practical man; for there is no land, be it ever so fertile, but by constant cropping may be exhausted and reduced to a state of barrenness. But it does not follow that fallowing is absolutely necessary to restore its fertility; because where a sufficient quantity of manure can be obtained, its fertility may be restored without fallowing; and on this scale of management, the longer land may be under cultivation it would, so far from being impoverished by it, be in a constant state of progressive improvement." Years afterwards, we find this very question dividing such experts as Messrs. Lawes & Gilbert, on the one hand, and Baron Liebig on the other, whilst, later still the late Dr. Voelcker said that "conclusive proofs can be given showing that, so far from being in a progressive state of exhaustion, the productiveness of the soils of England has wonderfully increased during the last fifty years."

NEW METHODS.

Whilst the Society was not slow to condemn bad farming, what it particularly desired to encourage was, not a mere following on in the old tracks, however successful the result might be, but new departures and experimental research, and this is indicated in the following Minute of December 10, 1782:—

> "As the design of the Society is not to reward good farmers for doing what is only their usual mode of practice, but to execute a spirit of emulation in others to follow their example and to indemnify them for any extra expense, or loss which they may possibly sustain by trying new experiments, it is strongly recommended by this Meeting to the Committee, that in the wording of Premiums, and adjudication of claims, especial care be taken to prevent any claimant from gaining any premium who appears not to have departed from his usual course of practice, or done anything new to obtain it."

FRIENDLY SOCIETIES.

The poorer classes were not lost sight of, as is shown by various discussions and by the offering of premiums for the encouragement of thrift, for length of service, and for proficiency in manual and other work. In November, 1783, the Society having been applied to for some pecuniary help for a Friendly Society at Seend in Wilts, which had suffered loss, it was resolved that the rules would not permit of the Bath Society's funds being thus appropriated. At the same time, the application suggested to the Society the desirability of considering how far such institutions were worthy of support, and Rack, with his usual assiduity, at once went into the matter and drew up a report, in which he said that, "having enquired into the utility of these institutions, in about 50 country parishes, I find that wherever they have been long established, numbers of poor persons both in temporary sickness and when by age and infirmities rendered incapable of labour, have been kept from becoming chargable to their respective parishes thereby; and that no inconvenience appears to have arisen from these institutions." In view of this satisfactory conclusion, it was resolved to offer a premium of Ten Guineas "to the most numerous Friendly Society, of not less than 30 Members, that may be soonest established in any country parish where no such Society has hitherto been instituted." This premium was awarded to a Friendly Society, consisting of fifty-five members, most of whom were handicraftsmen and labourers, in the parish of Weston.

STATE RECOGNITION.

In November, 1784, the Society began to agitate for some State recognition of Agriculture, and the following Resolution was passed :—

> "It being generally allow'd that the Incouragement of Agriculture is at this juncture peculiarly essential to the welfare of the Community, this Meeting thinks it advisable that the Society should present an address to Parliament, through the hands of the Minister, requesting their interest with His Majesty to obtaining the Royal Patronage, or such other publick encouragement or bounty from the State as may to them in their wisdom seem meet. And the copy of an address for that purpose having been now read and confirmed, the following gentlemen are appointed a Committee to revise the same in order that some proposition may be brought to the Annual Meeting for their approbation."

This seems to have been the first step taken by any public body to obtain such a recognition, and probably had some influence in the establishment of the old Board of Agriculture in 1793. It is some testimony in favour of voluntary effort that the Society should have outlived by so many years such an institution as the Board, when the latter had the active interest of the King, the support of such statesmen as Pitt and Fox, who, for once, agreed, and the pecuniary help of the Government. The Board lacked the vitality necessary to give it length of days, for it ultimately died of sheer inanition in 1820, and comparatively few persons are now aware that it ever existed. Even the present Board, it is announced, is shortly to veil its identity and to become in name a Land Department.

ANNUAL DINNER.

Doran has told us that " a good dinner sharpens wit, while it softens the heart," and Stowell, more prosaically, has laid it down that " it lubricates business." Both propositions being so generally admitted, the Members seem to have exercised a self-denial, not very common either in those days or in ours, inasmuch as they waited until the year 1785 before they entertained the idea of dining together. However at the Annual Meeting, held at the Lower Assembly Rooms (where the Royal Literary Institution now stands) on December 13 of that year, it was unanimously resolved :—

> " That it be recommended to the members who may in future attend the Annual Meetings that they dine together on those days ; it being apprehended that their thus meeting once a year in a free and social manner will tend to strengthen the general bond of union, and give opportunity for such a free discussion of agricultural subjects as may prove of general service to the institution. But this meeting is fully of the opinion that the proposal for the Society to be at the expense of such annual dinners, cannot with propriety be admitted."

It will be observed, that, with a proper regard for the Society's funds, it was distinctly resolved that those who attended must be prepared to defray the cost of the entertainment out of their own pockets. The Society, having determined to recognise this truly British institution, went a step further in the following November, when it was announced that the first dinner would be held in December, and, in the resolution conveying this, it was intimated that " as attendance at that meeting in particular is a duty incumbent on every member, it is respectfully intreated that none will absent themselves who can with any convenience favour it with their company." The Dinner was held at the White Hart Inn (the famous coaching hostel at which Mr. Pickwick put up in later days), on December 12, 1786, where, says the local press, " an elegant entertainment was provided to which the Earl of Ailesbury (the President), sent a remarkable fine doe, and the utmost harmony and good humour prevailed."

No doubt the assembled company re-echoed Goldsmith's expression of gratitude when he wrote :—

" Thanks, my lord, for your venison, for finer or fatter
Ne'er ranged in a forest, or smok'd on a platter."

The success of the initiatory function was sufficient to justify a place being reserved in the Society's programme for many future annual dinners. A survival of this piece of sociality is to be found in the Council and Steward's Mess Dinner, which is, and has been for many years, held on a few nights before and during the show-week.

When the Show Yard's at rest, and the day's work is done,
  There's a halt in the strain and the stress,
For "dinner is served," so the message doth run,
  Which summons us all to the Mess, to the Mess,
  To the cheery old "Bath and West" Mess.

There we'll drink to old friends who in memory live,
  I have seen in my time not a few,
But their names are still heard, and a welcome we give
  To the sons of the fathers we knew, aye we knew,
  And who link up the old with the new.

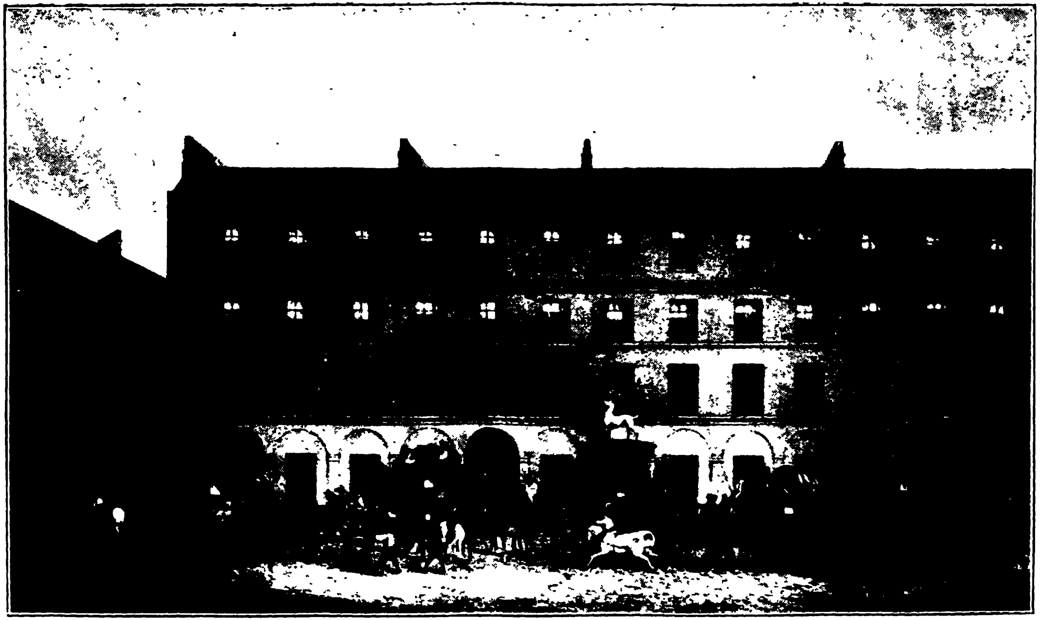
The Society has survived many institutions, including the old White Hart Inn, which, in 1867, was demolished in order to make way for the Grand Pump Room Hotel, the Society's head-quarters during the Shows at Bath in 1877, 1891 and 1900. The Society has preserved a continuity of life, not vouchsafed, apparently, to hosteleries, as "the Pump" has been for some years a derelict.

ENCLOSURES.

Old Tusser, although he strongly advocated enclosures, put the matter from another point of view as follows :—

"The poore at Inclosure do grudge,
  Because of abuses that fall,
Lest some man should have much to much,
  And some againe nothing at all."

This aspect of the case may have presented itself to some members of the Society. At any rate, some doubt appears to have existed in their minds as to the benefits conferred in every case by the many Enclosure Bills passed during the twenty years preceding 1786, for a report upon the subject adopted in November of that year, states that these Bills "clearly evince the ideas entertained by individuals with respect to the advantages arising from the laying of Common Fields in severally, and enclosing common pastures, on which in their former state scarce any improvement in agriculture could possibly be introduced. But as the general utility of Inclosures to the community is frequently denied, with no inconsiderable show of reason and just argument, a premium of Five Guineas, or the honorary premium of a piece of plate, be offered



THE OLD WHITE HART INN, BATH,

Where the Society's first Dinner was held.

From a Painting by J. C. Maggs in the possession of the Bath Corporation.

(*Reproduced from a block kindly lent by the Proprietors of the "Bath and Wilts Chronicle."*)

for the best Essay which, from the greatest number of actual inclosures, points out the advantages and disadvantages arising therefrom to individuals and to the community at large."

THE FIRST PLOUGHING COMPETITION.

" Ye rigid Ploughmen, bear in mind
Your labour is for future hours ;
Advance, spare not, nor look behind,
Plough deep and straight with all your powers ! "

Ploughing and various forms of plough were frequent subjects of discussion, and in the Minutes of the Annual Meeting held on November 14, 1786, we find a record which is particularly interesting as it led up to the first ploughing competition ever held in this country. It runs as follows :—

" It being a universally acknowledged truth that in the whole circle of Agricultural practice there is nothing more interesting to the Farmer than Ploughing well and cheap, this Meeting recommends that some Premiums sufficient to produce a fair and general Comparative Trial in March next both on light and heavy soils, of the Various Plows generally used in the Western Counties against the double Share, and other improved Plows as have been introduced from Other Counties ; and that one of the best constructed Essex ploughs may be purchased by the Society."

On February 13, 1787, the following arrangements for the competition were agreed upon :—

" That a Committee of Farmers (out of each County if present from all the four) who are practical Ploughmen and of liberal unbigoted minds, shall be chosen as Umpires to determine the comparative merit of the several ploughs used, and adjudge the following Premiums :—

" Six Guineas to the owner of the plough which performs its work in the cheapest and best manner. Four Guineas to the next best, two Guineas to the next best. Rewards will also be given to the Ploughman who do their work well. Every Candidate and Umpire to meet the Secretary at the Castle and Ball, Bath by 11 o'clock on the 27th, of March that the Ground may be viewed and properly measured out in Statute Acres that afternoon."

This was the last Meeting Rack attended, as he died in the following March, and, although the competition referred to in the next extract was held after his death, I have included an account of it because it gives the result of the action taken during his life-time, and also has a distinct historical interest as the progenitor of many similar competitions.

The competition took place on the date named, and the report of the Judges was as follows :—

" In consequence of the premiums offered for ascertaining the cheapest and best plough, for the Common practice of Husbandry in these parts of the Kingdom, a Field of strong old Ley-Ground, part of Barracks Farm, near

Bath, was selected as proper for the Test of Experiment. The persons who declared themselves candidates for this Trial, were,

1. John Billingsley Esq., of Ashwick Grove with a double-coulter plough, to be drawn by 6 Oxen in Yokes and Bows.
2. Mr. Henry Vagg of Chilcompton, with the Norfolk plough, having two Wheels and one Handle, to be drawn by two Horses abreast and guided by the ploughman without a Driver.
3. Mr. John Thomas of Keynsham, with a light Swing-Plough of his own Improvement, to be drawn by 4 small Welch Oxen in Yokes and Bows.
4. Farmer Sully of Midford with a Single Plough of this County, somewhat lightened and improved, having a Small Wheel under the Beam, in a Line with the Coulter, and to be drawn by 3 Horses, Length-wise.
5. Mr. George Flower of Midford, with a single plough, commonly used in this County, and to be drawn by 3 Horses Length-wise.
6. Lord Weymouth, with the Common Single Wiltshire Plough, to be drawn by 3 Horses, two abreast, and a single Leader.

For these Candidates six parallel pieces of Ground were marked out, near one Acre each, and all the ploughs were to begin at the same Time, and to plough their respective Lots at pleasure: but as nearly as posible 3 Inches Deep, and 8 Inches wide. On a previous Trial of the Soil the Norfolk Plough, from having only one Handle, and the Man not being used to plough stiff Ley Land, was found unequal to the Contest, and Mr. Vagg declined it. Mr. George Flower, also, on account of inferior workmanship, occasioned by the ill-construction of his Plough, declined. Thus the Contest began with only the other 4. Before a Judgment could be formed of the probable Issue Lord Weymouth's Plough was broken against a point of rock just beneath the surface, and consequently thrown out—the Trial, then, was confined to 3. . . . At the end of 3 hours and 4 mins. Mr. Billingsley's plough had finished its Lot. At the end of 5 Hours and 5 Minutes Mr. Sully's had finished; and Mr. Thomas's at the End of 5 Hours to a ½. The latter ploughed half his Lot with the 4 small-oxen, and the remainder with the Addition of a single Horse, the Soil being found too stiff for the strength of the oxen. The Committee of Judges was composed of 5 practical Farmers; three from Wilts, one out of Somerset, and one from the County of Gloucester. . . . On a full Examination and Comparison of the Goodness of the work it was the opinion of the Majority of the Committee that the double coulter plough had the preference, for general purposes of Husbandry, it laying the furrow more flat than the others, and consequently exposing more new Surface to the Influence of the Elements, and preventing more completely the Growth of Grass and Weeds between the Furrows. The want of a Wheel to the Swing Plough occasioned an unevenness of Furrow and Surface, which rendered the ploughing rather inferior on the Soil to the work of the Horse plough; tho' it appeared much inferior to what it might probably have been, had the regularity of a Wheel aided the excellent turning up of the Mould Board, for which Reason the Owner was requested to pursue his Improvement of a plough, which, in several respects promised considerable Utility as an Ox-Plough on Level Soils; more especially, as it was asserted by Mr. Thomas, that on such a Soil, in a Summer Fallow, his Man had ploughed with the same Plough and Oxen an Acre in 3 hrs. and 40 mins. . . . Finally, the premiums were awarded thus:—

1. The first premium of 6 Guineas to John Billingsley, Esq. with a Gratuity of 1 Guinea to his Servants.
2. The premium of 4 Guineas to Farmer Sully, with a Gratuity of ½ a Guinea to his servant.

3. The premium of 2 Guineas to Mr. John Thomas with a Gratuity of a Smock Frock to his servant.

And such was the evident comparative superiority of Mr. Billingsley's double coulter-plough, drawn by 6 Oxen, that several Gentlemen and Farmers, from different parts have in Consequence determined to work Oxen instead of Horses; and have given orders for the making of Double Ploughs to the amount of 6 or 7 in Number. One Gentleman who was an umpire on the occasion, and who occupies several large Farms, having been accustomed to keep on one of them 6 Horses and 2 Ploughs, being convinced that a double coulter plough and six oxen would completely do the Work of the Farm determined to make such a regulation immediately. Thus the Society may have the satisfaction of hoping that from a Continuation of similar public Trials, Improvements will be made in the lessening of Expence in Husbandry, from which, among numerous other Causes, the proposed good Consequences of their zealous Endeavours will result."

Mr. Billingsley thus stated the cost of using his plough :—

	s.	*d.*
Six oxen at sixpence each per day for food ..	3	0
Ploughman and driver	1	8
Wear and tear of plough, yokes, etc.	0	4
	5	0

Extent ploughed per day—Ley, 1½ acres, at 3s. 4d. per acre; fallow land, 2½ acres, at 2s. per acre.

Billingsley, later on in his report on the Agriculture of Somerset, says :—" Formerly the ploughs used here were the most awkward and ill-contrived that could be conceived, but they have, in a good measure, given place to the double-furrow plough. In all probability it would have remained undistinguished for its superiority had not the same been manifested at the different trials of ploughs exhibited under the direction of the Bath Agricultural Society."

ROOTS.

Prior to the establishment of the Society, the cultivation of root-crops was little known and less practised in the West of England, but articles in the first volume of the Society's " Journal " called special attention to the subject, and in the second volume Arthur Young contributed an excellent article on a " Proposal for further experiments on the advantages of cultivating carrots," which elicited other articles upon the same subject. Shortly after this the now celebrated " Mangel-Wurzel, or Scarcity Root," as it was called, which was absolutely unknown in this country until 1786, came upon the scene. In the following year, Sir Thos. Beevor, in an article contributed to the Society's " Journal," stated that he had received from a friend in Paris some seeds of the plant, and Sir Thomas gives particulars of how he cultivated it. He appears, however, to have regarded the leaves as the essential part. These, he found, were readily eaten by both cows and horses, whilst he and the guests at his table equally appreciated them when cooked. The introduction of the mangel into England is a matter of some interest just now, inasmuch as, with a partner to share its fame, it has of late enjoyed the distinction of forming a subject for political discussion. The situation, when mangels were unknown in this country, instinctively recalls to mind the enquiry, with a variation, of our childhood's song, "And what did the Pheasants do then, poor things?" The heat engendered by the introduction upon the party platform of two such apparently guileless innocents of the country-side, leads to the belief that now we shall have to wait

Till the lion reclines by the side of the lamb;
  And the pheasant lies down by the mangel;
Till the world can distinguish 'tween truth and a flam,
  Before we shall quite cease to wrangle.

The protection of Turnips from the fly also engaged the attention of the Society, and, it is said, that the idea of rolling, as a precautionary measure, was first suggested in the neighbourhood of Bath. Some gipsies had encamped in a turnip field, the owner of which noticed that the best crop was produced just at the spot they trampled upon. Rolling was certainly a more useful plan than the strewing of the ground with branches of the elder-tree, then recommended, or the placing of putrid lobsters with mathematical regularity on the land, which was another expedient suggested for keeping off what the old Berkshire song describes as "the floi upon the turmuts."

That the judges of crops entered for premiums had the courage of their convictions is shown by one of the reports respecting Mr. Robin's crop of Turnip-rooted Cabbage, for they say that they "can make no other report than that it consists of about five acres and is so very small, thin and bad that we think it cannot pay half the expense of raising it, exclusive of rent, being the worst we ever saw on any land whatever. There were ten acres sown, but half the field entirely failed and was planted with rape and cabbages."

GENERAL AGRICULTURAL INVESTIGATIONS.

One of the first subjects to engage the Society's attention was how to grow corn in the best and cheapest method, with due regard to economy of seed and sufficiency of yield. Inquiries were also made as to the system of setting wheat practised in Norfolk, and a premium of £10 was offered for setting ten acres in this way, so that Western agriculturists might have an opportunity of determining whether or not it would suit them to adopt it. The "curl" disease in potatoes, which first attacked the leaves and then extended to the haulm, causing the whole to putrify and decay, was taken in hand, and in 1786 the Society published as many as eighteen letters upon the subject, but without the discovery of any adequate preventive resulting. Planting, fencing, manuring, draining, irrigation, the culture of potatoes, carrots and cow-cabbage, water-meadows, dairy-management, farm-buildings, and labourers' cottages were among the many agricultural subjects that received attention.

During the first eleven years of the Society's existence, the breeding of live-stock, although not entirely overlooked, was subordinate to many other agricultural topics discussed, attention at that time being more directed to arable farming as the principal means of providing food for the people. When, however, the country made progress in material prosperity, more consideration was given to the live stock of the farm. Benjamin Smith, a noted breeder of cattle and sheep, descended from the Bakewell herd and flocks, contributed in 1783 some suggestions to the Society's "Journal," with respect to the improvement of stock. Even in those days Devon cattle were evidently well thought of, as he mentions that they fetched more per pound than any other cattle at Smithfield Market. He describes them as being set high on the legs and therefore weighing very light, and he recommended their being crossed with animals of a different breed which arrive earlier at maturity.

The establishment of Schools of Husbandry for the education of farmers' sons, on a similar plan to that adopted, in later years, by Prebendary Brereton, in North Devon, was brought under the Society's notice, in 1780, by the Rev. W. Lamport, of Honiton, and for his essay on the subject, in the first volume of the "Journal," he was awarded a premium of Twenty Guineas by the Society.

The literature, as well as the history, of Agriculture repeats itself, and the Society's annals furnish many proofs that the burning topics of to-day are but revivals of those of yesterday. Like the poor, certain subjects seem to be always with us, for these volumes show that a century ago men's minds were exercised with regard to the potato-disease, the turnip-fly, foot-rot, allotments, tithes, and other matters that find a place in the agricultural columns of to-day. Special subjects, too, were threshed out in the Society's publications long ago; and even tobacco-growing in England, a topic which was regarded by many as possessing all the charm of novelty when it was re-introduced in our own time, had its possibilities discussed so far back as 1779, when the Committee appointed to consider it came to the conclusion that "the cultivation of that plant does not appear to be an object which, under the present Parliamentary restrictions, can be of public utility." We seem to have progressed a little in this direction since then, as a company has recently been formed to exploit the industry in this country. Again, one of the subjects treated in the Society's "Journal" so recently as 1911 was the employment of oxen for draught purposes, and this same subject was discussed by the Society in 1784, when it was resolved to offer premiums to encourage the use of oxen in husbandry. Thomson, in his "Seasons," written in the earlier portion of the same century, puts on record the then common practice in his lines referring to the approach of Spring:—

> "Joyous th' impatient husbandman perceives
> Relenting Nature, and his lusty steers
> Drives from their stalls, to where the well-us'd plough
> Lies in the furrow, loosen'd from the frost."

ENCOURAGEMENT OF OBJECTS OF GENERAL UTILITY.

With a view to encouraging new industries, five guineas, or a Silver Cup of equal value, were offered "to the person who in the year 1784 shall introduce into any town or parish, in which no manufactory is at present carried on, the making of any useful articles of cloathing, either linen, cotton or woollen, in which the greatest number, not less than 40 poor people may be constantly employed." Although such an encouragement was beyond reproach, one can hardly suppose that the amount of the premium would be a sufficient inducement to set up a factory, or to influence anyone who might be in doubt upon the subject.

To promote the more humane slaughtering of cattle, a premium of five guineas was offered "to the Butcher, who, in the year 1783, shall kill the greatest number of horned Cattle, not less than 20, and of Sheep, not less than 50, in the method, and with the instrument, made use of at Naples." The subject is still occupying attention in these latter days, for at the Society's last Show an instrument was exhibited at the Stand of the Society for the Prevention of Cruelty to Animals which, if generally adopted, would go far to meet the views of those who so long ago ventilated the subject.

To stimulate invention in the direction of objects of general utility, a premium of Ten Guineas, or a piece of plate of equal value, was offered "to the person who shall make the greatest quantity, not less than 10 reams, or bundles, of writing or other kinds of the most useful package paper composed of vegetable substances not previously manufactured into cloth, thread or cordage and which shall be as cheap as similar kinds of paper now in use. N.B.—Specimens of various papers made from potato-haulm, hop-bines and other vegetable substances of English growth may be seen at the London Society's Room in the Adelphi." Similarly, an honorary premium of plate was offered for "a cheap, easy and effectual method of destroying the smoke of fire-engines, glass-houses, furnaces, &c., in order to prevent their being an annoyance to the neighbourhood." In a philanthropic spirit, the Society instituted an inquiry into the causes of gaol fever and the best system of prison discipline.

Among the many models which were brought under the Society's notice was one of a coach, "with a new constructed perch to prevent its being overturned." It was examined by the Meeting, in the presence of several coach-makers and mechanics, and was approved, subject to certain suggested improvements which the maker undertook to carry out.

The ailments of human beings as well as those of cattle received attention, as the following Minute shows:—"An inhaler for coughs and disorders of the lungs on Mr. Mudge's plan, but with some new improvements, being sent to this Society, is referred to the inspection of some of the medical gentlemen, whose opinion on its usefulness will be acceptable." The medical faculty were, from the start, supporters of the Society, several eminent physicians both in Bath, London, and elsewhere, including Scotland, actively interesting themselves in its work. These rendered essential aid in a long and careful inquiry, instituted by the Society in 1784, with reference to the cultivation of rhubarb in England for medicinal purposes; seven "judicious physicians and druggists" residing in Bath, London, Edinburgh and other places being appointed to go into the matter. The investigation was of a very exhaustive and searching character, as may be inferred from the fact that the qualities of the various specimens of rhubarb submitted were practically tested by their effect upon the human interior, with a view to ascertaining, after vigilant observation, which were the most satisfactory in their action. After the effect upon many patients had been carefully noted, the general conclusion arrived at was that there was no reason why British-grown rhubarb should not fulfil its purpose as well as that from abroad if foreign methods, as to careful selection, drying, and general preparation for the market, were followed. We also find Dr. Falconer reporting on the merits of an improved Inhaler for "fumigating the mouth, throat, and fauces." In 1784, a premium, consisting of a piece of plate, was offered for the best essay, "written from actual experiments made" on the best method of detecting the adulteration of medicines.

The various responses to these incitements to investigation and research and to the exercise of ingenuity and enterprise were duly examined by the respective Committees dealing with such matters, and many valuable contributions to the Society's published Transactions resulted therefrom.

DISTINGUISHED SUPPORTERS.

During the period over which this article extends, the Society was fortunate in securing the active co-operation of many men distinguished in various walks of life. In addition to those already referred to, mention may be made, first and foremost, of Arthur Young, the well-known agricultural writer, and, later on, the first Secretary of the old Board of Agriculture, who made some valuable communications to the Society on various matters of husbandry. though he did not hesitate to condemn the Society for offering prizes for turkeys, on the ground that "what will fatten a turkey will fatten a hog"; which he regarded as much more important. Others include that remarkable man Dr. Joseph Priestley, the theological controversialist, the friend of Benjamin Franklin, the discoverer of oxygen, and the father of modern chemistry; Coke of Norfolk, to whom reference has already been made, who joined the Society in 1785: Sir William Hamilton, author, antiquary, and British Ambassador at Naples, and husband of the celebrated Lady Hamilton; (he it was who initiated the discussion, already mentioned, on the slaughter of animals, by contributing a paper on the mode of killing beasts in Naples by stabbing them in the vertebra of the neck): Sir Cæsar Hawkins, sergeant-surgeon to George II and George III, who invented the cutting gorget; Dr. Fothergill, F.R.S., the eminent physician and scientist; the third Duke of Buccleugh, the first President of the Royal Society of Edinburgh; the first Lord Rivers, diplomatist and author of "Letters to a Young Nobleman," and other works; William Curtis, the author of many works on botany and entomology and the editor of the *Botanical Magazine*; and that famous western agriculturist, John Billingsley. The latter was so closely identified with the Society from the first, being one of its most active promoters, that he is entitled to something more than a passing reference. In early life he was engaged in manufacturing pursuits but afterwards settled down under the shadow of the Mendip Hills. In the course of a few years he was instrumental in enclosing and improving 20,000 acres of upland, and in draining over 30,000 acres of parish land, which prior to this had no appreciable value. He is, however, best known for his very able report, forming one of the publications of the old Board of Agriculture, upon the agriculture of Somerset. He had a reputation abroad as well as at home, as shown by the many tributes of regret at his death that came from distant parts of the world. Among others, the Agricultural Society of Philadelphia passed a resolution lamenting his decease and expressing its high sense of his "distinguished virtues and patriotism and of his long and successful exertions, which had not only most essentially promoted the agricultural interests and prosperity of his own nation, but had been exemplary and instructive to the cultivators of the soil in all countries in which they were known."

Another agriculturist of note who took an active interest in the Society, both as a participator in its discussions and as a literary contributor, was Thos. Davis, steward of the Longleat estate, who, like Billingsley, was an able and diligent promoter of agricultural improvement. His report, furnished to the Board of Agriculture upon the Agriculture of Wilts, forms a companion volume to that on Somerset just referred to. He was the author of some excellent articles in the Society's "Journal," including one on the improvement of Labourers' Dwellings, and he was a warm advocate, as well as a director, of Friendly Societies, several of which he was instrumental in establishing in the County of Wilts.

The minutes furnish several examples of a continuity of family interest in the Society. An intimate connection between the past and the present was established in 1786, when it was announced that Sir Thos. Dyke Acland, Bart., had joined the Society. This was the great-grandfather of the present Baronet, and so for more than a century the honoured name of Acland has been found upon the roll of members. In the same year, the eldest son (Visc. Weymouth) of the Marquis of Bath took part, as already mentioned, in the Society's Ploughing competition, and, since that time, both the father and the grandfather of the present Marquis have held office in the Society, whilst his lordship of to-day has twice occupied the presidential chair. Such instances, in which this interest has been handed on from father to son, have long been a happy feature of the Society's history; I myself have seen, during my tenure of office, three generations of one family successively occupying official positions in the Showyard.

The land-owning, as well as the farming, interest supported the Society, including many peers of the realm, but it was not until a few years after the period to which this article refers that English royalty identified itself with its work. Foreign royalty was, however, represented at a Meeting on September 12, 1780, in the person of the Prince of Daschkan, whoever he was, and those present were so overcome by his radiance that, before proceeding to the business of the Meeting, they passed the following resolution:—"That the thanks of this Society be respectfully given to His Highness the Prince of Daschkan for his politeness in becoming a member of this Society and honouring this Meeting with his presence."

The Society had, moreover, in 1780, a distant association with that historical personage, her imperial (and imperious) Majesty, Catherine II, of Russia, for the minutes of a meeting held on February 8th record the election, "as an honorary and correspondent member, of Mon. Komhoff, from Russia, now residing in England for the purpose of studying Agriculture, by order of the Empress." So that, even in those days, when our methods were, in many respects, so primitive, we seem to have been credited with enough knowledge to attract the attention of other nations.

The Society was very fortunate at the onset in securing the support of men who were not only devoted to its interests but had the knowledge and capacity to render their zeal effective. Happily, the old tradition still holds good, as the roll of those who are holding office in this year of grace amply testifies. At the Society's Centenary Meeting the late Earl of Cork gave appropriate expression to this source of strength when he said :—" One of the great causes of the success of this Society was that it had been always managed by thoroughly practical men, who had their heart and soul in the work. If it had not been for this, if the Society had been left chiefly in the hands of ornamental members meeting only once a year, it was very doubtful whether they would have seen the hundredth anniversary."

THE SOCIETY'S APPRECIATION OF RACK.

Throughout the Society's proceedings one can trace Rack's guiding hand, and at every annual meeting a strongly-expressed vote of thanks bore testimony to the appreciation of his services. The last active commission, outside his ordinary sphere of duties, which he undertook on the Society's behalf was in 1786, and it is explained by the following extract from the Minutes of a Meeting held on February 14, in that year.

> "The Rev. Mr. Close, having proposed that the Society should send their Secretary the ensuing summer into Suffolk and Norfolk in order to gain complete information relative to the modes of husbandry in those counties and establish a regular correspondence with the best and most intelligent farmers there, and very politely offered to accommodate Mr. Rack at his house and take him a tour for this purpose without its being attended with much expense to the Society after he gets to Ipswich, this Meeting vote their thanks to Mr. Close for the same and resolve unanimously that the Secretary shall make the said tour in June next."

In the following September, Rack reports: —

> "I have, agreeable to the resolution of several former meetings, made a tour through the counties of Norfolk and Suffolk, and part of Essex, in which being accompanied by Mr. Billingsley, a considerable mass of very interesting information has been collected, which will be properly arranged for the Committee's examination previous to the Annual Meeting in December; and that a correspondence is settled with divers Gentlemen who are practical farmers in those Counties."

In December of the same year it was unanimously resolved that the Secretary's salary be increased to £70 per annum, to take effect from last Quarter day, and a resolution followed upon this recording the Society's thanks to him "for his assiduity and unremitting attention in promoting the views and best interests of this Society and for his great punctuality in transacting all their concerns." He did not live long to enjoy this additional emolument, for in the following February his name is attached to the Minutes for the last time, and after that we miss the clear, bold, readable hand in which they were always drafted by himself, for the minutes of the next Meeting in March record his death and the appointment of his successor.

RACK'S CONTRIBUTIONS TO LITERATURE.

Whatever leisure Rack had, when he was not engaged in the main occupations of his life, was devoted to literature, which he pursued with the zeal of an enthusiast, as is shown by the following catalogue of his published works:—"Reflections on the Spirit and essence of Christianity"; "Poems on several Subjects"; "Mentor's Letters addressed to Youth"; "Description of and observations upon the Cockchaffer"; "The Life and Character of W. Penn"; "Edmund: an eclogue"; "Essays, Letters and Poems"; "The Origin and Progress of Agriculture in different Ages and Nations"; "A respectful Tribute to the Memory of Thomas Curtis"; "England's True Interest in the Choice of a New Parliament"; "Survey of the County of Somerset."

His most popular work was probably "Mentor's Letters," which went through four editions and of which 3,000 copies were sold. His papers on "the Origin and Progress of Agriculture" and on "The Cockchaffer," which first appeared in the Bath and West Society's Transactions, were afterwards re-printed in other publications. He edited "Caspipina's Letters" by the Rev. Jacob Duché, in addition to making many contributions to various periodicals. The volume entitled "Letters, Essays and Poems" was published by subscription, and the author must have had many friends, for there are nearly five hundred names on the subscription list, including those of Lord Walpole, Arthur Young, Coke of Norfolk, Graves, the poet, Herschel the astronomer, Dr. Falconer, Dr. Parry and many other people of distinction.

Philip Thicknesse accused him of being the author of "A Letter addressed to Philip Thickskull," and retorted in "A Letter from Philip Thickskull to Edmund Rack," but there is no evidence that Rack admitted the authorship in question.

Rack's last literary engagement was a joint share in Collinson's History of Somerset. He undertook the "topographical-parochial survey" portion of the work, and, notwithstanding the ill state of his health, he visited, during the successive years of 1782–3–4–5 and 6, nearly every town and parish in the County. He had all but finished his task when death overtook him, so he may be said to have literally "died in harness." Collinson, in his preface, handsomely acknowledges the important part taken by Rack, in collecting, collating, and arranging material for the work, which he did not live long enough to see in print.

His various compositions show a natural gift for authorship and a remarkably wide knowledge of men and things, coupled with considerable powers of expression. His chief delight evidently lay in poetry, which, in its aims and methods, as he practised them, was very typical of the age in which he lived, for it made up in sentiment what it lacked in spontaneity. He was not inspired, but he knew the laws of rhyme and rhythm and how to use them with effect. Nature and the delights of an Arcadian existence supplied many of his themes, and the workings of an All-wise Providence, in whom he placed implicit trust, afforded him still greater scope. A deep religious feeling and a reverent appreciation of the highest truths are predominant notes in much that he wrote, and his own character, as reflected in his writings, is very well portrayed in the following extract from an epitaph he wrote upon one of his friends:—

"Slave to no sect, he took no private road;
  But lov'd the good, whatever name they bore:
He look'd through Nature up to Nature's God,
  And, while he reason'd, ceased not to adore."

THE PASSING OF RACK.

"The man who consecrates his hours
By virtuous effort and an honest aim—
At once he draws the stings of life and death."

For some years prior to his death, Rack suffered a good deal from ill-health, originally due to a severe attack of fever. He was troubled with a violent cough, of a consumptive character, and in a letter dated May 2nd, 1778, he writes to his friend Polwhele: "I seem to be verging downwards to that valley which terminates in the shadow of death. Perhaps I may descend it with unexpected celerity, but I am not solicitous about an event which must be left to the Great Disposer of all things, who will certainly do what is right; yet I sometimes think that this hand, which now guides the pen of friendship, will soon forget its cunning." The Rev. Rich. Polwhele, above referred to, was in turn, poet, topographer, theologian and literary chronicler, but his chief claim to remembrance lies in the fact that he was the author of the oft-quoted phrase (frequently attributed to Bentham) "the greatest happiness of the greatest number."

Rack's forebodings were, happily, not realised so soon as he feared, for, on the 26th of the same month, he writes:—"I am, through mercy, much better than when I wrote last: indeed as well as I can expect to be; my constitution is but feeble and will never, I apprehend, fully recover the shock it received from a fever four years ago. I cannot bear to pay that attention to study which I have formerly done without feeling the effects of it for several days."

At the end of the same year he had so violent an attack of jaundice that his life was despaired of, but again he rallied only to have a relapse the following year. Yet, notwithstanding these physical disabilities, he struggled on, with wonderful courage and determination, pursuing the work to which he had put his hand, though he had to absent himself from the Society's Meetings during the early part of 1782.

Yet even in 1779, when he was so disabled, he helped to establish a Philosophical Society for Bath and undertook its Secretaryship. About this time an additional misfortune befel him in the unexpected loss of the little property he possessed, but he allowed nothing to deter him from the pursuit of literature, as his numerous efforts in this direction testify, or to lessen his energy in directing the fortunes of the Society he had founded. In the summer of 1785 asthma was added to his other ailments, from which he obtained some relief by a visit to his native County. In October, however, he was so ill with it that he could not walk across a room without experiencing the greatest difficulty of respiration; in fact, as he himself expressed it, he "existed rather than lived," though this could hardly be true of anyone who was still capable of rendering such good service to his fellow-men. Collinson says of him that "like a true Christian, he awaited the stroke of death without a murmur," and the final summons came on February 22nd, 1787, in the fifty-second year of his age. His friend, Polwhele, with whom, as will have been seen, he corresponded, wrote his elegy, which appeared in the *Gentleman's Magazine*, and was reprinted in "Poems by Gentlemen of Devon and Cornwall."

Rack, when he first came to Bath took up his abode at 5, St. James's Parade, but in 1781 he removed to Harrington Place, Queen Square, and there it was he passed away. The City of Bath has placed many tablets upon houses which have been the abiding places of men and women who have deserved well of their country. Perhaps some day it may occur to the citizens that there is yet a house which it would not be unfitting to adorn in this way. It might serve to remind future generations that there lived in it one with a claim to remembrance and through whose instrumentality the name of Bath has been carried far and wide for many years, not merely through the length and breadth of the kingdom, but also, as the correspondence-files testify, to the British possessions throughout the world as well as to most European countries.

RACK AS A MAN.

"His life was gentle, and the elements
So mix'd in him that Nature might stand up
And say to all the world—this was a Man."

His writings and his methods show Rack to have been a God-fearing, simple-minded man, with a real desire to use the gifts Providence had bestowed upon him for the benefit of his fellow men and the advancement of all that was honest and of good report. His industry and energy were remarkable, and he regarded the duties entrusted to him in that spirit of self-abnegation which compelled him to put his whole heart and soul into their performance. He evidently never spared himself, and the courage with which he fought against the disabilities arising from the state of his health, rather than the interests he had to maintain should suffer, extorts admiration as one follows the development of his varied career. We may hope that Shakespeare's assurance that "the labour we delight in physics pain" applied to the full in his case, as in that of many another earnest worker. He loved and pursued literature for its own sake, finding in it his main relaxation, whilst his appreciation of science and art, and of their value to the human race, was sufficient to induce him to use every endeavour to promote a knowledge of what pertained to them. By anticipation, he acted throughout his career upon the injunction contained in the motto adopted by the Society long after he had passed out of its ken. But he was not content with accepting "Work and Learn" as the watchword of his own life merely, for he spared no effort to induce others to share it. He had the foresight to see how much Agriculture needed the enlightenment that "Science with Practice" could bestow and how much its future depended upon combined effort in this direction. So, he set to work to provide this. He came to Bath a perfect stranger, and yet, within a comparatively short time of his taking up his residence there he had inspired others with his own worthy ambitions and had succeeded in inducing the very elite, in the best sense of the term, to unite in an effort to realise his hopes and aspirations. That he succeeded in this speaks volumes for his tact, his judgment and his pertinacity, whilst there must have been also, in no ordinary degree, some personal charm in his method of wooing human sympathies to fully account for his success. It is safe to say that no one of those who have followed him in the honourable office he held, has served the Society with more zeal, more devotion or more disinterested earnestness. He laboured with all his might, he achieved much, and he died a worker to the last.

It is given but to few to lay the foundations of a Society which can stand the stress and strain of life for nearly a century and a half and be still fulfilling its mission, and if an excuse be needed for occupying the pages of the "Journal" with some record of the man who was capable of this, I trust the worthiness of the theme will plead for the inadequacy of its treatment, and for this endeavour to "tread the long extent of backward time."

II.—THE TUBERCULOSIS ORDER, 1913.

By Hugh Begg, F.R.C.V.S., County and District Veterinary Inspector for Lanarkshire, Scotland, and Examiner to the Royal College of Veterinary Surgeons on Materia Medica, Pharmacy, Therapeutics, and Toxicology.

When the Board of Agriculture and Fisheries framed the Tuberculosis Order of 1913, and put it into operation on May 1st of this year, they took the initial step in a great campaign for the future control and ultimate eradication of bovine tuberculosis. But, while this laudable attainment is what the Board hope for when more heroic measures are put into operation, it is abundantly evident that without amplification of many of its articles the order can make no pretensions to deal radically with this scourge of our herds. And, though the order is not to be construed as a milk bill, it is at once clear that its immediate aim is the destruction of those animals that are eminently dangerous to mankind. It marks a distinct advance on the powers hitherto possessed by local authorities against bovine tuberculosis in that it gives power to destroy at once and compensate the owner for :—

(1) Animals suffering from " Tuberculosis of the Udder " ;
(2) Animals giving tuberculous milk ;
(3) Animals suffering from " Tuberculosis with emaciation."

Under Article 15 of the Dairies, Cowsheds, and Milkshops Order, 1885, it is provided that the milk of cows suffering from Tubercolusis of the Udder (*a*) shall not be mixed with other milk, (*b*) shall not be sold or used for human food, and (*c*) shall not be sold or used for food of swine or other animals unless and until it has been boiled." Without power to slaughter these animals much policing was necessary, and, so long as an animal was retained alive, it was always difficult to make sure that it had ceased to be a menace to human and animal health, while it could be sold in open market any day and might then be difficult to trace.

In those areas in which the optional powers conferred by the Dairies, Cowsheds, and Milkshops Order have been taken full advantage of for some years past, the operation of the Tuberculosis Order will not be signalized by any very appreciable decrease in the prevalence of bovine tuberculosis until its scope is widened.

The power to deal finally and definitely with certain forms of Tuberculosis now rests with the Board of Agriculture and Local Authorities under this Order, and the work of inspection is vested in the members of the veterinary profession upon whom naturally falls the responsibility of controlling the diseases of animals. But it should always be remembered that many public health departments led by progressive medical men have done excellent pioneer work in dealing with that class of tubercular animal, the victims of udder tuberculosis, now amenable to this Order, whose milk was dangerous from both a medical and a veterinary point of view.

Although starting from a different standpoint, in removing a danger operating on men and animals alike, this double effect of the work of Public Health Departments is maintained and increased under the greater powers of the Tuberculosis Order, which, though ostensibly an animal's order designed to purify our herds of tuberculosis, will simultaneously achieve the nobler object of emancipating man from the subtle danger that lurks particularly in the milk of tubercular animals. The findings of the Royal Commission, as to the communicability of bovine tuberculosis to man, are being clearly proved anew, especially by those who are engaged in the sphere of surgical tuberculosis, and it would be a weak policy that did not simultaneously provide for cutting out this known source of infection to man while the campaign against human tuberculosis was being systematically waged at so great an expense.

Veterinary surgeons have at all times been glad of the opportunity of acting under Medical Officers of Health in their responsible duty of safeguarding the public health by inspecting live animals, and, it may confidently be asserted, they will continue to assist in this capacity, while, on the other hand, it is apparent that the medical profession see in the Tuberculosis Order a work that is peculiarly veterinary and which in its effects is essentially allied to what they are carrying on under the Public Health Acts.

The fight so long delayed has begun, and the Board of Agriculture may rest assured that any passive resistance hitherto offered by some local authorities did not in any case rest on any desire that our herds should continue to be decimated by this scourge, but was substantially based on a common wish amounting to a demand that a question of such national importance ought to be backed up by the Treasury of a rich nation with financial assistance far in excess of what has been promised. The effect on the spirit and progress of the veterinary profession of five months' working of the Order has been salutary in the extreme. Veterinary inspectors recognising the magnitude of the work so confidently entrusted to them by the Board of Agriculture have been roused by a common desire to show their fitness and quit themselves well in this great task, and if the scheme is not completely successful the responsibility will rest with our legislators.

As was to be expected, veterinary inspectors in carrying out the Order have encountered clinical and other difficulties that have tested their skill in diagnosis and exercised their foresight and ingenuity in designing methods for consolidating the numerous details of instructions contained in the Order so that the work might be simplified. In this endeavour the ready assistance of the Board has always been at their command, and the result is that the local authorities and their veterinary inspectors who have gained experience through carrying the Order into effect for several months are unanimously of opinion that the scheme is eminently practicable in operation and calculated to achieve the objects which its designers have in view.

This being so, it is clearly the duty of local authorities to put their houses in order and fall into line, so that stockowners within their areas may obtain the advantages offered by the Order in the removal from their herds of the more virulent cases of tuberculosis, and the local authorities and their inspectors gain such experience in working this somewhat limited Order as will fit them for the more heroic measures of eradication contemplated by the Board. When any local authority fails to attend to the notification to them of a suspected animal, the matter should be reported direct to the Board of Agriculture.

Until all passive resistance ceases (and there is abundant evidence that many loiterers are now beginning to move in the matter) the Board's reluctance to increase the scope of the Order meantime is founded on a wisdom that overlies at least one modest demand as a guarantee for the success of more advanced legislation, viz., satisfactory evidence that those who are to execute the work have been acquiring some experience under the existing powers. If the Order is to succeed, it will be necessary for the Board to make such supervision as will secure that no Local Authority through disregard of its obligations allows the herds under its control to be a menace to those of its neighbours.

Article 2 of the Order provides that notification shall be made to the Local Authority by every person having in his possession or under his charge—

(1) Any cow which is, or appears to be, suffering from tuberculosis of the udder, indurated udder, or other chronic disease of the udder.

(2) Any bovine animal which is, or appears to be, suffering from tuberculosis with emaciation.

The conditions of the udder that merit notification are easily determined by any milker. Speaking generally, they include every painless enlargement or lumpy swelling of the udder tissue irrespective of the quality or quantity of the secretion.

The act of reporting "*automatically*" places the animal under the provisions of Article (9) (Precautions to be adopted with respect to milk) or (10) (Detention and isolation of suspected animals), as the case may be. Therefore, when an owner reports a milch cow on account of her udder he should at once cease to use or sell her milk till she is inspected and the restrictions are removed, and if the notification concerns an animal suspected to be suffering from tuberculosis with emaciation it should as soon as possible be isolated from its neighbours, pending the inspector's visit. Notwithstanding these obligations on the owner, which are often misunderstood. veterinary inspectors should serve a written or printed form embodying the requirements of Article 9 or 10 or both.

Article 3 lays a similar obligation on private veterinary surgeons to notify cases among their patients that apparently come within the purview of the Order. Failure to give such notification is an offence against the Act of 1894. Some veterinary surgeons have raised objections to this compulsory notification by them of the existence or suspected existence of disease in a client's animal. and to the smallness of the fee of 2s. 6d. which they are entitled to receive from the local authority for such notification, but such objections are scarcely tenable. Neither provision is new in combating contagious disease. The same rules apply to all scheduled diseases, human as well as bovine. They are indispensable and the fee is not inadequate—it is the usual sum paid alike to medical men and veterinary surgeons for such work.

Under both of these articles the local authority is required to inform the sanitary authority of every case notified, and Article 4 also requires a copy of the veterinary inspector's preliminary report to be sent to the Sanitary Authority, while under Article 5 notice of intention to slaughter must be sent to the Board of Agriculture, as well as to the owner. The Order might be usefully amended here, to save this superfluity of reporting to the Sanitary Authority, because many cases are notified on very flimsy evidence. and there is always a possibility that the inspector's preliminary report may be wrong.

The apparent object of reporting to the Sanitary Authority that an animal is notified as suspect is to give that authority, should they see fit to avail themselves of it, the opportunity of taking steps under the Public Health Acts. Yet the veterinary inspector's report is negative in a large percentage of cases, and it is difficult to conceive what interest the Sanitary Authority can have in any cases but those which on post-mortem examination are shown to be tubercular. Besides, the necessity of sending copies of the preliminary reports to the Sanitary Authority is open to the additional objection that it puts the officials of these authorities to needless trouble in cases that turn out to require no attention on their part.

If the Order required, which it does not, that a copy of the post-mortem certificate only should be sent to the Sanitary Authority, its object would be better accomplished, because the evidence of disease having existed in a given herd would not be hypothetical but conclusive, and needless labour would be avoided. The difficulty here referred to might be got over by an harmonious notification arrangement between Executive Committees and Sanitary Authorities.

Under Article 4, which deals with inspection and examination of animals, it will be seen that the veterinary inspector must examine with all practicable speed not only the animals notified as suffering, or suspected to be suffering from those forms of tuberculosis already indicated, but also such animals as are suspected of giving tuberculous milk, and he has also power to examine any other bovine animal on the premises.

It has been found that certain tuberculous animals, betraying no tangible lesion in the udder, do yield milk containing tubercle bacilli. It is extremely doubtful whether, if such a cow be possessed of an udder absolutely free from tubercular lesion, the tubercle bacilli present in other parts of the body, if carried to the udder by the lymph stream, do find their way through the milk secreting cells and present themselves in the milk before they have set up a diseased nidus in the tissues from which they are cast off and become mixed with the milk that has been secreted. The explanation probably lies in our inability to determine by palpation of the udder the presence of the very early stages of tuberculosis of the udder.

We have examined, both microscopically and biologically, the milk obtained from the apparently healthy udders of numerous animals suffering from advanced pulmonary tuberculosis and have not yet found tubercle bacilli. When we do find them in any such case, we shall expect to discover some suspicion of a tubercular udder lesion on post-mortem examination.

All milk samples from diseased udders should be taken with certain precautions. The teat should be made perfectly clean, and it is generally conceded that the first milk procurable should be discarded. There is some difference of opinion as to whether the middle or the last milk got from the udder is richest in bacilli. Either of them is likely to serve the purpose and should be drawn into a sterile bottle holding four ounces or more, though in many instances only a fraction of this quantity can be got. The milk is then centrifuged, and, from the deposit in the bottom of the centrifuge tube, smears are made on glass slides and suitably stained, after which they are examined microscopically for tubercle bacilli. Ninety per cent. of infected milk samples can be detected in this way within a few hours, thus enabling the inspector to provide for the removal of the animal in a very short time. For the purposes of the Order, therefore, the most should be made of and great reliance placed on careful microscopical examination, and if this be negative the restrictions may reasonably be removed unless the clinical characters of the case forbid it.

In the meantime all samples microscopically negative ought to be tested biologically, and if, after three weeks, any inoculated animal proves to be tubercular, the cow from which the secretion was taken should at once be put down. If the inspector has no facilities for biological work, repeated samples should be taken for examination with the microscope while the animal is restricted under Article 9.

Under Article 4 (3) the inspector may also take samples of faeces, urine, or any abnormal discharge from any animal on the premises. The most valuable abnormal discharge is expectorate coughed up by some animals that are the subjects of pulmonary tuberculosis. If this be available at all it can usually be secured when the animal coughs, and coughing may be excited by pinching the larynx, pulling out the tongue, or making the animal run some distance. A piece of paper held in front then catches the expectorate which can be secured on a swab and examined directly. It often happens that during the time an inspector spends with an animal to which he has applied the Tuberculin Test, he manages to secure its sputum. Yellowish gluey masses of expectorate got from lung cases are usually very rich in bacilli.

The difficulty that attaches to the inspection of animals suspected to be suffering from "Tuberculosis of the Udder" or of "giving tuberculous milk" is very much confined to the use of the microscope in detecting tubercle bacilli.

When we come to deal with certain cases notified under "tuberculosis with emaciation," difficulties crop up in spite of the fact that the inspector may apply the Tuberculin Test, provided he has obtained the written consent of the owner. It should here be noted that the Order does not sanction the use of tuberculin to animals other than those that are markedly suspicious of belonging to one or other of the classes at which the order aims. The test should never be applied if the inspector is not prepared to take the re-acting animal, and the testing of animals that are not amenable to the Order is a grave encroachment on the rights of the private practitioner. Indeed, the application of the test under the Order is much more limited than would at first appear. In all milk cases the discovery of tubercle bacilli in the milk is all that is required for diagnosis. Even in those cases of udder disease in which an examination of the milk taken yields no results microscopically, a reaction to tuberculin could not supersede the result of the milk examination as a proof that the abnormal state of the udder was or was not due to tuberculosis, while the use of tuberculin in emaciated animals whose expectorate contains tubercle bacilli would be quite superfluous and would cause an unwarranted increase in administration expenses. And because the subcutaneous test is useless in animals whose temperature is above normal or markedly unstable, (though in such cases the less reliable, ophthalmic or intradermic tests may be applied), it would seem that under this order the sphere of the first-named classic test is limited to those non-febrile animals advanced in emaciation from an ill-defined cause, and which present no definite clinical symptoms of tuberculosis.

Opinions might reasonably differ within wide limits as to what constitutes "tuberculosis with emaciation." We might define the phrase as meaning any material loss of condition in an animal clinically affected with tuberculosis, but that would be an error, for if the animal is not quite thin, wasted and suffering from tuberculosis, it would not conform to the interpretation intended by the Board. The animal may be lean, but if it be not emaciated in an extreme sense it is not intended that we should slaughter it, even though it be a disseminator of disease, coughing up sputum teeming with tubercle bacilli. The want of power to put down such an animal is the most serious limitation of our scope of action, and the greatest stigma that attaches to the Order, since the animal that pollutes her stall with tuberculous sputum or other tuberculous discharge must be a potent factor in spreading the disease we are attempting to control, and providing a future crop of cases. The Board's reason for allowing such an animal to live on as a distributing centre of disease, till with one foot in the grave its bodily condition merits the description which the term "emaciation" in the Order is meant to convey, is admittedly not a scientific one. Though the Board may to some extent have feared it, the inclusion of open lung cases would not have been disastrous from the point of view of interference with our milk supply. Financial considerations must have been the chief factor that dominated the scope of the Order, and it is the Board's prerogative to judge how much might be done with the means at their disposal and without endangering the whole project by undue heroism in their first assault.

So far as outsiders are able to judge from local experience and from the published returns of the first four months, it would seem that a comparatively small proportion of the £60,000 promised by the Treasury for the first year will be required. Nevertheless, the full extent of the Board's obligation is to pay one half of the compensation due for animals slaughtered.

Local authorities, therefore, might with good reason press for such an immediate extension of the Order as would entail on the part of the Board an expenditure more nearly approaching £60,000.

With a clear understanding of the types of tuberculous animals that may be slaughtered under the Order, the inspector having condemned an animal reports to the Local Authority. Article 5 (1) provides that the Local Authority shall then with all practicable speed give notice in writing of their intention to slaughter the animal (in the Form set forth in the schedule attached to the Order or to the like effect) to the owner or person in charge of the animal and to the Board of Agriculture. Relative to the slaughtering of the animal, the order provides the following reservations:—(*a*) If the owner or any person acting for him gives notice in writing to the Local Authority or to their inspector or other officer directed to carry out the slaughter, before the animal is killed, it shall not be legal for the Local Authority to cause the animal to be slaughtered without the Board's special authority; (*b*) this special authority shall not be given in the case of any animal valued under this Order at more than £30, if and so long as the animal is detained and isolated and the milk (if any) is dealt with in accordance with the provisions of this Order. And if the value of the animal proposed to be slaughtered as agreed or certified under this Order exceeds £30, the Local Authority shall not proceed with its slaughter unless so directed by the Board.

It is to be noted that if it appears to the owner that an animal is unduly detained under Article 10—possibly through the inspector's difficulty or delay in making a diagnosis—he may have the animal slaughtered at his own risk.

Article 6, " Valuation for compensation," provides that the Local Authority shall agree in writing with the owner of the animal as to its value, failing which a valuer must be appointed by them or by the Board on the application of the Local Authority. The value of the animal is to be ascertained (first) on the basis of the post-mortem examination showing that the animal was suffering from tuberculosis, and (second) on the basis of the post-mortem examination showing that the animal was *not* suffering from tuberculosis. Should the post-mortem examination reveal that the animal was not suffering from tuberculosis, the higher second value is to be paid as compensation to the owner plus the sum of £1. But if the post-mortem examination verifies the inspector's preliminary report the compensation payable is based on the first or lower valuation. The actual amount to be paid depends on whether the animal was the victim of " advanced tuberculosis." This term is defined by the Order.

If "advanced tuberculosis" is found, one-fourth of the lower value falls to be paid, otherwise a sum equal to three-fourths of the same agreed-on value is payable. Here again it is to be noted under Article 7 that if the owner or person in charge of the animal requires that the post-mortem should be made by another veterinary surgeon than the Local Authority's inspector, and if the owner and the Local Authority fail to agree on a neutral veterinary surgeon, the nomination shall be made by the Board, and the fee shall be paid by the Local Authority, who are entitled to recover half of the cost from the owner under Article 8 (2) and (3).

The veterinary inspector or other veterinary surgeon making the post-mortem examination shall certify the result to the Local Authority and send a copy of his certificate to the owner in terms of the schedule attached to the Order.

In some quarters objection has been taken by veterinary inspectors to their acting as valuators. Veterinary inspectors need not fear to undertake this duty. With their knowledge of the diseased condition of the condemned animals they are specially equipped to attach a proper value to them, and to meet any unreasonable arguments offered by the owner. For the sake of keeping down administration expenses, they should frankly accept this duty, remembering that in any special case of dispute it is always open to them to fall back on an independent valuer.

In fixing the higher value of any animal condemned, the valuer must exercise his own judgment, and the same remark applies to assessing the lower or diseased value of cows in fair condition condemned for tuberculosis of the udder, or for giving tuberculous milk, the flesh of which may wholly or in part be passed for food by the meat inspector. But, though he need not at any time value an animal condemned for tuberculosis with emaciation at less than £6 because the minimum sum payable is a quarter of the lower valuation or £1 10s. 0d., whichever is the greater, it is perfectly plain that he has no power to put a higher diseased value than £6 on such an animal; indeed, he is not entitled to put restrictions on any tuberculous animals other than cows with tuberculosis of the udder or those giving tuberculous milk unless and until they are emaciated in the full sense of the term, and have fallen in value to this sum.

His decision as a valuer of animals condemned for tuberculosis with emaciation is dominated by Article 8, "Compensation."

In determining whether tuberculosis is "advanced" or "not advanced," it is provided under Article 8 (4) "that the disease is to be considered as "advanced" when the carcase is emaciated and tuberculous lesions are present." The word carcase here includes all the organs, so it follows (*a*) when a live animal is condemned for "tuberculosis with emaciation," the carcase (provided no mistake in the diagnosis of the disease has been made) must also be tabulated "tuberculosis with emaciation," and be paid for at the low rate of compensation. The veterinary inspector having in his preliminary report returned the case under the heading "tuberculosis with emaciation" would have but to find the presence of lesions, however infinitesimal, in some part of an organ to conclude the presence of "advanced tuberculosis," since to record it otherwise would be a flat contradiction of his preliminary report. (*b*) If that argument be conceded, and if we were to deal under this head with cattle in fair condition of body because they had clinical evidence of disease, or were discharging material containing tubercle bacilli, it would inevitably follow in many cases that the salvage from the carcase would exceed the amount of compensation payable, and though the surplus would be payable to the owner, there would be an apparent conflict of opinion between the veterinary inspector and the meat inspector—a most undesirable state of affairs. That, however, is what we must be prepared to face if we include animals not quite advanced in emaciation and whose carcases are not foredoomed to confiscation by the meat inspector. By demanding a literal interpretation of this heading, the Board ensure that at most only a few shillings represent their share of compensation.

Nevertheless, it is certain that if the Board were to extend the Order, so as to enable Local Authorities to deal with animals suffering from pulmonary tuberculosis and voiding tuberculous sputum, irrespective of their bodily condition, the amount of compensation payable per head would not be a serious matter, because :—

(1) If disease were found to be "advanced" in post-mortem, only a quarter of the lower valuation would still be payable.

(2) If the disease were "not advanced" it is practically certain that the whole or part of the carcase would be passed for food, and the salvage got would go far to defray the cost of the extra compensation payable. Obviously those Local Authorities that have many abattoirs conveniently placed through their areas possess advantages for dealing economically with condemned animals.

Article II. which deals with "suspected" animals in markets, fairs and sale-yards, has probably received more criticism than any other Article in the Order, especially from the Local Authorities of Boroughs in which large markets are held.

It has been suggested by some market town authorities that the whole Article might be deleted without materially affecting the purpose of the Order. This desire is based on their fear that in carrying out the optional provisions of this article they would have to deal with a large number of animals amenable to the Order that would come to their markets from the areas of other Local Authorities for the purpose of sale only. While there is some reason for this attitude it must surely be expected that towns which reap the advantages of their markets should be prepared to accept the disadvantages also, taking the thick with the thin. It cannot be gainsaid that systematic inspection of markets is at all times and for many reasons a sound proposition. The knowledge that such inspections are made would act as a deterrent to the exposing of diseased or suspected animals at public sales, and though we do not believe that such inspections would be the means of detecting many diseased animals, yet regular inspection of markets will, sooner or later, be found to be a necessary step in preventing the spread of all animal diseases, including tuberculosis.

If the Order made it an offence to expose in a market an animal suffering from tuberculosis in any of the forms specified in the Order, the effect would be extremely salutory, and would, to a great extent, remove the contention of the authorities of market towns. Up till now very few authorities have done much in the matter of inspecting markets under this Order, because modifications of this Article by the Board are expected on account of representations that have been made by some local authorities.

As it stands, the Order practically permits the owner of a suspected animal detected in a market to select which Local Authority shall deal with the case, and if the market town authority required the animal to be removed from the market to the premises from which it was brought thereto, there would be endless confusion in fixing the habitat of many of these market-trotting bovines. On a well-established principle, we believe that where disease is found, there it should be dealt with.

The requirements of Article 12, "Cleansing and Disinfecting," are very apt to be overlooked, and stock-owners are not sufficiently alive to the necessity of thoroughly disinfecting the polluted stall of an animal which has suffered from any form of open tuberculosis.

The disinfection should be carried out in terms of the Diseases of Animals' "Disinfection" Order of 1906, which requires that the place or thing or part thereof required to be disinfected shall be thoroughly coated or washed with (*a*) a 1 per cent. (minimum) solution of Chloride of Lime containing not less than 30 per cent. of available chlorine, or (*b*) a 5 per cent. (minimum) solution of Carbolic Acid (containing not less than 95 per cent. of actual Carbolic Acid) followed by a thorough sprinkling with limewash, or (*c*) a disinfectant equal in disinfecting efficiency to the above-mentioned solution of Carbolic Acid followed by a thorough sprinkling with limewash. The disinfection is to be done by the occupier at his own expense and to the satisfaction of the Local Authority.

By Article 14 it is enacted that "Tuberculosis shall be a disease for the purposes of the following sections of the Act of 1894, viz. :—

"Sections 19 and 20 (Slaughter in disease and compensation generally).

"Section 43 (Police).

"Section 44 (General administrative provisions), etc."

Section 20 enables a Local Authority to dispose of the carcase of an animal slaughtered by burial, sale, or otherwise, according to the condition of the carcase, and in the event of the carcase or any part of it being sold, the money so received shall be credited to the funds of the Local Authority. If in any case the sum received by the Local Authority on the sale of a carcase exceeds the amount paid for compensation to the owner, the Local Authority shall pay that excess to the owner after deducting reasonable expenses. The Local Authority has also power to use, for the purpose of burial, any piece of ground in the possession of the owner of the animal which may be suitable for the purpose. If the animal slaughtered by the Local Authority has been insured by the owner, the amount of compensation awarded to him may be deducted by the Insurance Company from the amount payable under the policy. The Local Authority may also withhold compensation in a case where the owner has been guilty, in relation to the animal in question, of an offence against the Act, or where the animal, being a foreign animal, was in their judgment diseased at the time of its landing.

COUNTY OF LANARK.

TUBERCULOSIS ORDER, 1913.

Statements showing number of animals dealt with from May to September, 1913; results of preliminary and post-mortem examinations; cost of compensation and administrative expenses, etc.

Statement No. 1.

NUMBER OF CASES NOTIFIED AND RESULTS OF PRELIMINARY AND POST-MORTEM EXAMINATIONS.

	No. of cases.	Died or killed by owner while under investigation.	Result of Preliminary Examination.		Result of Post-mortem Examination.	
			Negative.	Positive.	Advanced.	Not Advanced.
May	29 32 animals	5	12	15	7	8
June	16 19 animals	1	7	11	7	4
July	12 14 animals	1	10	3	3	—
Aug.	10 12 animals	—	8	4	4	—
Sept.	23 25 animals	—	14	11	9	2
Total	90 102 animals	7	51	44	30	14

Statement No. 2.

Cost of Compensation, Administrative Expenses, and Net Cost to Local Authority.

(*a*) *Positive Cases.*

	No. of animals slaughtered.	Compensation payable to Owner.			Salvage, less cost of removal of animals.			Net cost of Compensation.			Travelling Expenses of Inspectors, Notification Fees, &c.			Total.		
May	15	65	1	8	36	4	6	28	17	2	15	4	4	44	1	6
June	11	40	5	0	21	2	0	19	3	0	6	14	5	25	17	5
July	3	5	0	0	1	19	1	3	0	11	1	13	3	4	14	2
Aug.	4	6	10	0	2	6	2	4	3	10	4	4	8	8	8	6
Sept.	11	34	5	0	16	17	4	17	7	8	4	10	5	21	18	1
	44	151	1	8	78	9	1	72	12	7	32	7	1	104	19	8

(*b*) *Negative Cases.*

	No. of Animals.	Travelling Expenses of Inspectors, Notification Fees, &c.					
May	12	14	14	4			
June	7	5	7	9			
July	10	5	5	3			
August	8	3	14	8			
September	14	5	16	7	34	18	7
	51				£139	18	3

Salary of additional Veterinary Inspector (five months) ..	86	13	4
Cost of additional clerical assistance (five months)	27	10	0
	£254	1	7
Deduct—Half of net cost of compensation recoverable from Treasury	36	2	8
Net cost to Local Authority	£217	18	11

III.—THE PLANT AS A PARASITE.

By S. Leonard Bastin.

There are few things more interesting than the close similarity between human affairs and those of the great world of Nature. Almost every question which exercises the minds of men has a counterpart in the life story of some animal or plant. There is, perhaps, no greater plague in society than the parasite, the hanger-on, who, whilst making no attempt to earn an honest living, relies for his support upon the more thrifty members of the community. In the world of vegetation we also find a group of abandoned robbers—plant-parasites, the worst types of which have even lost the power of subsisting on their own account. These plant parasites are of great interest from a general point of view while a study of them should appeal particularly to the agriculturist, for several of the species prey upon the crops of the farmer. The more we know about the habits of these plants the more we are disposed to view them with disfavour. In some instances, particularly in the case of the fungoid parasites, the results of their attacks may be disastrous, whilst there is good reason for believing that even the more moderate types of these vegetable robbers do more harm than is generally supposed.

The Story of the Mistletoe.

Most people if they were asked to name a typical plant-parasite would probably suggest the mistletoe. On account of its size this well known species is one of the most striking of our native robber plants, but it is comparatively mild in the demands which it makes upon its host. As is well known the Mistletoe (Fig. 1) is found growing on a great many kinds of trees, such as apple, pear, sycamore, lime and, most commonly of all in this country, on the black poplar. As far as most botanists have observed, it is exceedingly rare on the oak. The life history of the plant is very interesting. During the autumn and winter its white berries are largely eaten by birds, particularly the missel thrushes, and as the seeds are able to withstand the action of the digestive juices, they pass quite unharmed through the food canal. A considerable number of the seeds are thus naturally deposited upon the branches of trees, and, if the plant is a suitable host, the germination and growth of the seed follows. In all probability a start is not made until the following spring. The first sign of activity on the part of the Mistletoe seed is in the development of the radicle, or young root, which, in whatever position it may first of all appear, always finally turns round towards the bark of the tree. In passing, it may be mentioned that this is in direct opposition to the habits of most radicles, which invariably turn downwards towards the earth. As soon as the tip of the radicle touches the bark, a strange little clinging disc is produced which helps to steady the baby plant in the next stage. This consists in the development of a modified rootlet which pierces right through the bark and reaches the wood of the tree. This root does not actually penetrate the tissue, and as soon as the wood is reached, all further growth ceases for that year. With the coming of the next spring the normal growth of the tree encloses the rootlet in a layer of new wood. Subsequently the rootlet gives off lateral branches, and these spread between the bark and the woody layer; in turn, as the seasons go on, these branches also send down rootlets and in this way the plant is constantly kept in touch with the new layers of wood. The vigour of the Mistletoe plant depends a great deal upon the extent to which the lateral branches are able to spread, for it is in their journeys to and fro beneath the bark of the tree that they are able to absorb the water and salts which the unfortunate host really requires for its own use. As the roots of the Mistletoe spread, fresh stems arise, so that one seed may give rise to a large number of bunches. The Mistletoe has green leaves ; in these, chlorphyll is present, though to a limited extent. A certain amount of starch is probably formed in the foliage, though for mineral salts and water the parasite is entirely dependent upon its host. Without doubt a vigorous growth of Mistletoe on a fruit tree is prejudicial, but the great difficulty is that when once established it is almost impossible to eradicate the pest. A constant cutting away of the top growth would certainly tend to check the drain on the host, and this is declared to be the best thing to do, complete removal being almost impossible without serious injury to the tree. Happily it is only in certain parts of the West of England that the Mistletoe can be described as really common. In some districts the orchard owners turn the pest to good account by cutting it at Christmas time for the London market.

THE PROBLEM OF THE ROOT PARASITES.

A very interesting little group of plants are those which confine their attacks to the roots of their hosts. Some of the most singular of these species are very advanced parasites in that they depend for the whole of their subsistence upon the plants to which they are attached. Perhaps the most widely known of these root parasites are the Broomrapes (*Orobanche*). Several species have been identified although there is a strong resemblance between all the plants save in the matter of size. The part of the Broomrape which rises above the ground is a sturdy stem bearing a number of brown or purplish flowers. (Fig. 2). The stem is covered with leaflets, but these are brown and cannot abstract the carbon from the atmosphere. The whole plant looks like a dead flower spike, and on this account attracts little attention. Perhaps for this reason the Broomrapes are considered to be rather scarce, but they are really quite common, especially in dry pastures near the sea. The seeds of the Broomrapes are excessively small, and, owing to their dust-like character, secure a wide distribution through the agency of the wind. The seedling is a curious little thread-like process which, during its short independent existence, lives entirely on the amount of food material which has been stored away in the seed. One end, which we may call the root, strikes downwards into the earth following a spiral course, and in this way increasing the chance of coming into contact with a suitable host. If it is not fortunate enough to do so the seedling is bound to die, as it is quite incapable of absorbing food from the soil on its own account. Many of the Broomrapes grow parasitically on a large number of plants, such as clover, wild thyme, scabious, and other common plants, so that it is very likely that a satisfactory host will be met with. If this is the case an attachment is quickly secured and the root-like part of the parasite thickens into a large structure, not unlike a tuber, from which the flower stem arises. So intimate is the association of the Broomrape with its host that it is almost impossible to separate the tissue of the one from the other. Happily the Broomrape in its various forms seems to attack clover least of all. This is a very good thing, for the parasite is such a strong growing plant that it often kills its host before the season is over.

A STRANGE ROOT PARASITE.

Even more curious than the Broomrape is the Toothwort (*Lathrea squamaria*), a plant which in appearance is certainly one of the most remarkable of all British species. (Fig. 3.) The plant is very local, but it is not perhaps so rare as is sometimes supposed; owing to the fact that it leads almost an underground existence it is often overlooked. It is usually found as a parasite on the roots of hazel poplar and other trees. The seed of the Toothwort germinates in damp earth and sends out a little rootlet living at the expense of the store laid up in itself. The main root often branches freely, and, as all the growths follow a spiral course, they are very likely to come into contact

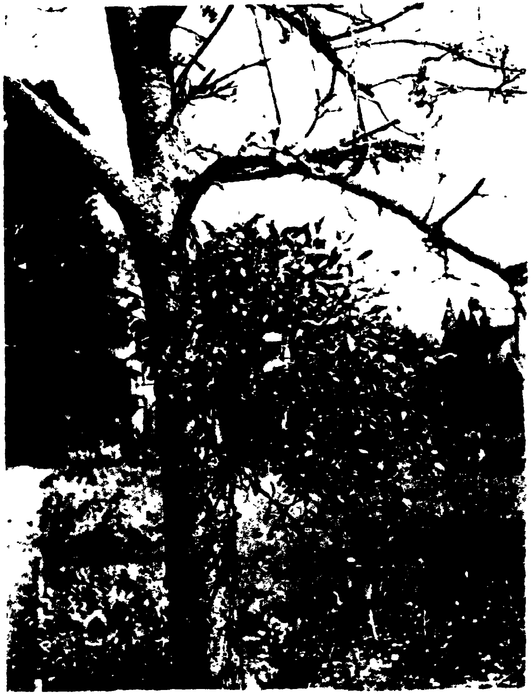


Fig. 1 MISTLETOE.

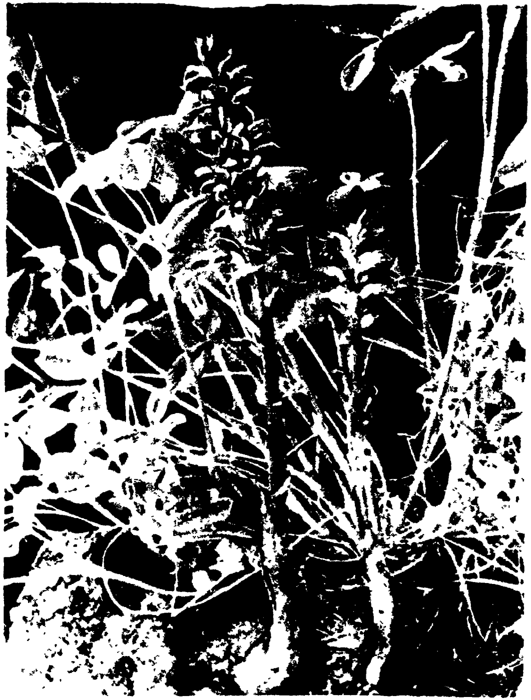


Fig. 2. BROOMRAPES (*Orobanche*) (Parasitic on Clover).

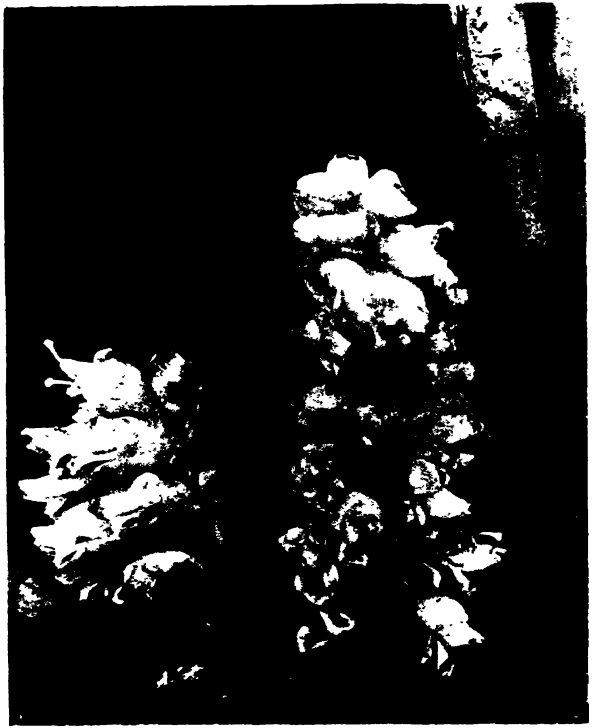


Fig. 3. TOOTHWORT (*Lathraea squamaria*)
(A Root Parasite).

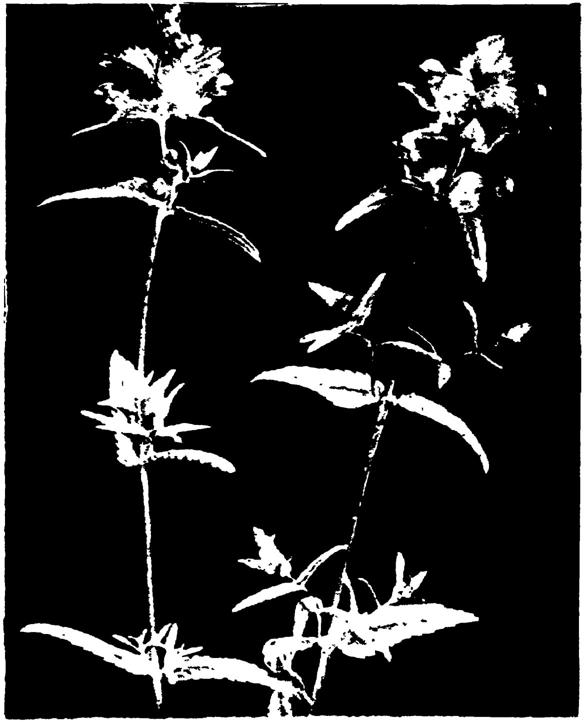


Fig. 4. YELLOW RATTLE
(*Rhinanthus Crista-galli*).

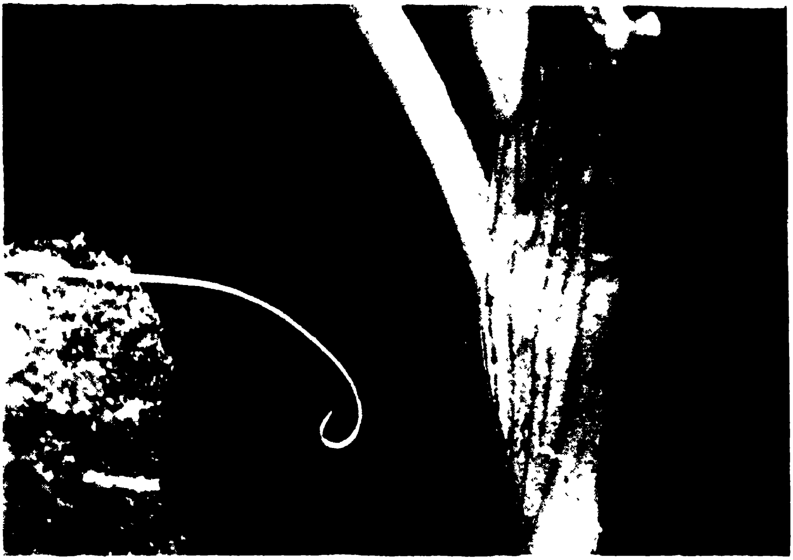


Fig. 5.—DODDER. ATTACKING CLOVER (Somewhat enlarged).

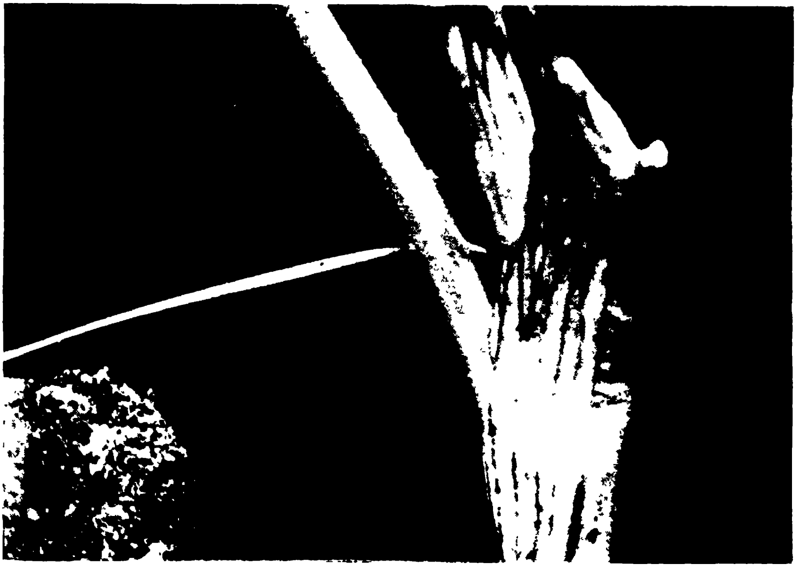


Fig. 6.—DODDER. A HOLD SECURED. (Somewhat enlarged).

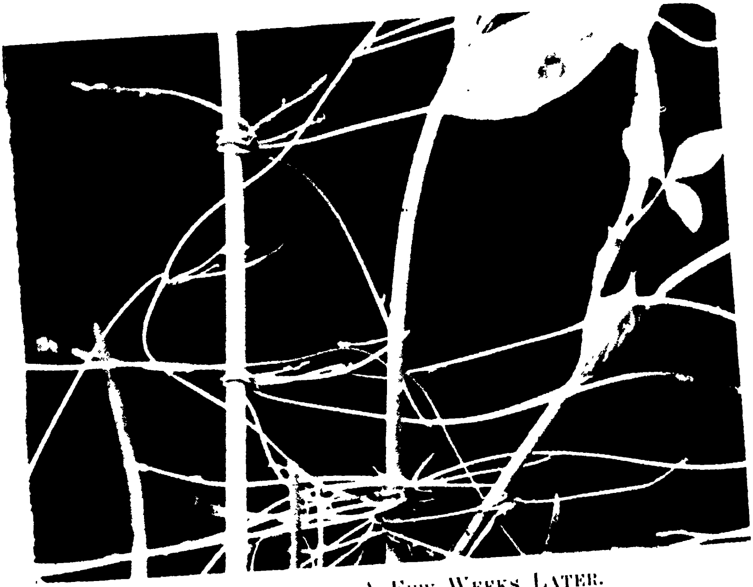


Fig 7. DODDER. A FEW WEEKS LATER.
Showing how the Dodder has increased.

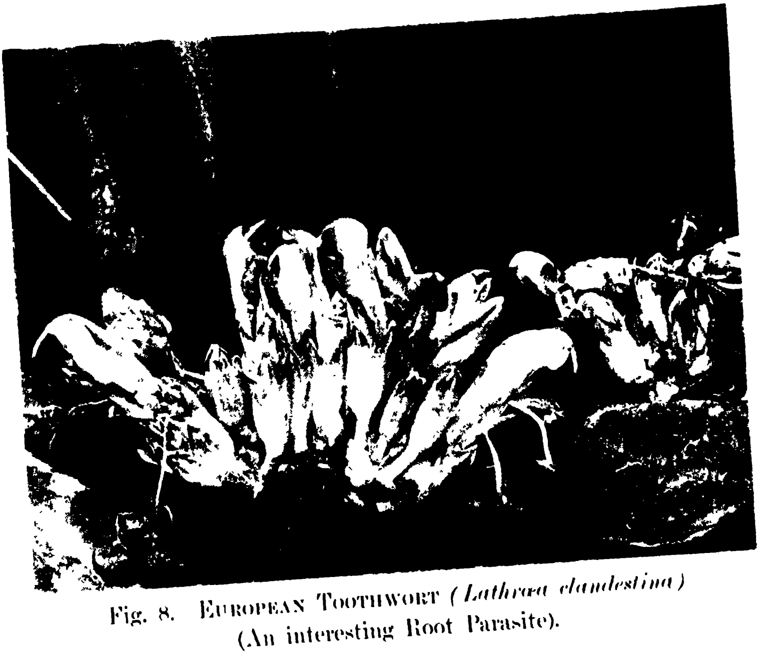


Fig. 8. EUROPEAN TOOTHWORT (*Lathræa clandestina*)
(An interesting Root Parasite).

with the root of some tree. If this is of a favourable species suckers are formed on the roots, and these adhere to the host plant absorbing nourishment by means of special cells. The shoot of the little seedling grows very rapidly and developes on the lines of a stout stem covered with fleshy scales which bear a certain resemblance to teeth. These underground stems spread in all directions, and one Toothwort plant will sometimes envelope the roots of an entire tree. The plant flowers in April at which time it sends up a stem bearing a number of purplish flowers. There is at no time any sign of green foliage on the part of the Toothwort; the plant is a parasite of the most extreme type. The tooth-like scales, which have already been noticed, are curious owing to the fact that they have strange recesses in which small insects have been found. These have been described as definite traps. As a matter of fact, it seems rather doubtful whether the Toothwort is insectivorous, many botanists holding the view that the little captives have simply got into the cavities by chance. A European Toothwort (*Lathræa clandestina*). sometimes seen in botanic gardens, is remarkable for its handsome purple flowers. (Fig. 8). In this case, the suckers, by means of which the parasite is attached to its host, are as large as split peas.

PARASITES OF THE PASTURE.

From the point of view of the farmer, an interesting group of root parasites are those which are often so abundant in meadow grass. These belong mostly to the *Scrophulariaceae*, or Fig Wort tribe. The most striking of the species are the Eyebright (*Euphrasia*). Yellow Rattle (*Rhinanthus*), Lousewort (*Pedicularis*), Cow Wheat (*Melampyrum*), and the Bartsia. In their early seedling days none of these plants give any suggestion of their parasitic tendencies, for it is only after the development of the secondary roots that any suckers are formed. Nearly all are somewhat shallow-rooted and spread over a wide area, attaching themselves by means of their suckers to the grass roots. The Cow Wheat, the Yellow Rattle (Fig. 4) and the Eyebright are, of course, annual plants, but they produce seed very freely. Long before anyone suspected the parasitic habits of these plants, the country people in many countries had marked them down as harmful species. Thus the German name for the Eyebright is Milchdieb (Milkthief), and it is declared that after the flowering of this plant the supply of milk begins to lessen. As, however, there are other causes tending to bring about a slackening in the amount of milk in the later summer, it is hardly fair to blame the Eyebright for all the trouble. It is easily seen that where such a plant as the Yellow Rattle is abundant, the grass is very poor and sickly; much of it dies even before the cutting of the hay crop. It is very clear that these pasture parasites are only partially dependent upon their host. They have green leaves, and, in addition to the roots bearing suckers, they have a plentiful supply of others which seem to be able to withdraw nutritive substance from decaying vegetable matter. Probably, too, under certain conditions, they may even be able to sustain an entirely independent position. At any rate, experimenters have been able to raise some of these species in ordinary soil even though the plants were not allowed to come into contact with any host. In this case, it is interesting to notice that the parasites showed a very inferior development; evidently they have got very much into the habit of relying for their support upon the grasses to which they attach themselves.

THE QUESTION OF THE SAPROPHYTE.

A certain number of plants usually found growing in shady woods are often considered by ignorant people to be parasites on account of their absence of any green colouring matter. Types of these are seen in the Bird's Nest orchid (*Neottia nidus-avis*) and the yellow Bird's Nest (*Monotropa hypopitys*). These plants are referred to by botanists as saprophytes; they are distinguished from parasites in that they are never attached to a living host. They rely for the carbohydrates, which other plants with green cells are able to form during sunlight, upon decaying animal and vegetable matter. All plants, whether green or not, can, if supplied with the necessary carbohydrates and the proper mineral salts, build up proteins, so that it is not necessary that the saprophytes should secure their proteins direct from the host which supplies them with carbohydrates. As a general rule, it is observed that saprophytes make their own proteins, although without a doubt these would be absorbed if present in the soil. In passing, it may be mentioned that nearly all the fungi are saprophytic in their habits. Owing to the lack of chlorophyll in their cells, they are unable to form carbohydrates with the aid of sunlight.

PARASITISM AT ITS WORST.

Of all the robber plants there are none so harmful as the Dodders. It is generally considered that we have only one native species

(*Cuscuta europaea*), but several of the continental types have made themselves thoroughly at home here. The Dodders are parasitical upon such plants as flax, nettles, hops, and, worst of all from the farmer's point of view, on the clover. The life story of the Dodder is one of the most fascinating in the book of Nature. Practically all the species are annual, but before the plant dies away in the Autumn, there has been an enormous distribution of seed; this is shot out explosively from the cases in which it is produced. All through the winter these seeds lie quite dormant, and it is not until rather late in the spring that they start to germinate. This delay in making a start is obviously a great advantage to a parasite, which will be entirely dependent upon a host when it has once commenced its career. As the seed germinates, there comes on the scene a little club-shaped root which buries itself in the soil. The seed of the Dodder is remarkable on account of the fact that it has no cotyledons; yet it has an ample store of food material stored away in the embryo itself. Thus the little white shoot, more like a thread than anything else, grows upwards with a great deal of vigour. It is generally stated that if the Dodder plant cannot secure a host it will die within a week or so, or at any rate will only grow energetically for a comparatively brief period. The writer has recently grown the Dodder from start to finish, and one of the most astonishing features of the little seedling was the length of time which it was able to exist on the store of nutriment within itself. Some plants in the possession of the writer grew out to the length of two and three feet, although they were not provided with hosts. All this time the shoot was winding in and out, a habit of growth which must materially help the plant in its search for a victim. (Fig. 5). There is nothing very surprising in this particular manner of growth seeing that the Dodder is a member of the Bindweed tribe. If some plant should happen to be within reach of the Dodder an attachment is quickly secured (Fig. 6), and the way in which the shoot twines round the plant is more than ever suggestive of a climbing species. As soon as the stem of the Dodder has enclosed the plant, wherever it comes into close contact with it, curious sucker-like processes, which finally bud off into rootlets, are produced. These plunge into the tissues of the host and are able to tap the great store of nutrient matter which is present in the up-flowing sap. (Fig. 7). Directly the attachment is complete the Dodder dries up at its roots and from thenceforth it is never in contact with the soil again. The plant grows prodigiously, and a specimen which came under close observation completely overwhelmed, and practically killed, a lusty clover plant within a few weeks. Quite apart from the harm which the Dodder works as a parasite, the mechanical injury to the plant is considerable. The growth of the parasite is such that the foliage is half smothered by the masses of thread-like stems, and as the Dodder increases in bulk the stems of the host may be almost bowed to the ground with the weight. All seed merchants have to take especial care to see that the Clover seed which they send out is freed from Dodder seed. The depredations of quite a small number of Dodder plants in a field of Clover is almost past belief. It is no exaggeration to say that the outcome of a single seed might affect the plants covering several yards of ground. Other species of Dodder are often more ambitious in the hosts they select. Thus one is commonly found growing on the furze, and, though this plant may be well protected against ordinary enemies, it is quite unable to meet the attacks of this advanced parasite. Strong growing gorse plants are sometimes absolutely overwhelmed by the Dodder and almost smothered out of existence. Towards the end of the season the Dodder produces quantities of white flowers, which make it possible to say that the plant belongs to the Convolvulus order.

PARASITIC FUNGI.

It is quite certain that the deadliest of all plant parasites are those of a fungoid nature. It has already been stated that a large number of fungi are saprophytic in habit—that is they secure their nutriment from dead organic matter such as decaying leaves, rotting wood, and even decomposing animals. On the other hand, there is a very formidable list of fungi which are definitely parasitic in their mode of getting a living. The largest of these make their attacks upon trees, a very excellent type of this kind of fungus being the well-known fir wood parasite (*Fomes annosus*). So far as the outside of the tree is concerned, the presence of the fungus is indicated by the curious bracket-like processes which often jut out in tiers. These are, of course, responsible for the spores of the plant. The fungus is a perennial and the brackets last for a good many years, finally becoming very hard, although in this state they are quite dead. Every season a new growth arises over the old ones. Sometimes, when the fir wood parasite appears on the roots of the tree, the bracket-like manner of growth is abandoned, and the fungus appears as a flat white deposit on the surface of the part attacked. In any event the outward signs of this deadly parasite are trifling compared with the unseen ramification of the fungus. For, like all the higher fungi, it increases, by a vegetative process known as the mycelium, fine threads, which ramify through the host while the bracket-like outgrowths in the case under notice are merely the special spore-bearing processes. Thus, although there may be little external sign of the fir-wood parasite, yet the attack may have been so serious that practically the whole of the interior of the tree has been destroyed. Cases are on record where fir trees, apparently quite sound, have been felled for the sake of their timber only to find that the trunk has been completely hollowed out by the ravages of this parasite. Wherever there is any suspicion of an attack by this fungus the tree should be removed and the roots dug up and burnt; there is always a great danger of the pest spreading throughout a whole plantation. A very small amount of observation will show that other trees, such as the beech and the birch, are attacked by special parasitic fungi; these are very destructive to the well-being of the hosts which have to support them. Some of the larger fungoid parasites are very impartial as to the trees which they select. Thus, a very common toadstool, the Honey Agaric (*Armillaria mellea*), is to be found growing on all kinds of trees; often enough it invades the orchard and will do an enormous amount of damage to fruit stock even before the owner is aware of its existence. Here the spore-bearing processes are not in the form of brackets, and are designed in the orthodox toadstool fashion. The mycelium takes the form of what are known as rhizomorphs, hard black cords, which spread about from tree to tree. When a tree is once attacked there is nothing to do but to remove and destroy the victim; a preventive against the Honey Agaric is said to be the painting of all exposed surfaces with tar. This prevents the germination of the spores, which, we must remember, in the case of all fungi, are so light that they receive a very wide distribution through the agency of the wind.

Certain parasitic fungi confine their attentions to dead wood but they none the less cause an immense amount of damage. A very good example is the so-called "dry-rot" (*Merulius lacrymans*). Too often has this destructive parasite secured a great hold before its presence is even suspected. As a rule, the first intimation in a building is the presence of a small quantity of brownish dust—the spores of the "dry rot." A further examination will show that some joist is practically destroyed by the ravages of the fungus. The only step to take is the removal of all the damaged wood; as a preventive, adjoining pieces of timber should be soaked with creosote. The presence of the mycelium of dry rot may be usually detected in timber in the form of what is known to builders as "red stripe."

When these markings are present the timber should never be used unless it is first thoroughly saturated with creosote.

THE MILDEWS AND RUSTS.

One could not very well conclude even a brief survey of parasitic plants without some reference to the small fungoid pests, the popularly called mildews, smuts and rusts, which are certainly the most obnoxious of all. Typical of these is the common corn rust (*Puccinia graminis*). This fungus is, of course, well-known on account of its destructive effect when it attacks crops of wheat, oats, and other cereals. Like so many of similar habit, the parasite has more than one form of reproductive bodies, and it is also singular on account of the fact that in its life cycle it does not confine its attentions to one kind of plant. Towards the end of the summer the fungus, which is then in the form of yellow streaks on the leaves of the cereals, produces a considerable quantity of winter spores. These, unlike most spores, are able to remain in a quiescent state for many months, and, in actual fact, do not germinate until the following Spring. When they do make a start, all that the winter spores do is to give rise to a number of very much smaller spores. These are exceedingly light and are drifted about by the wind. Sooner or later some of them will settle upon the leaves of a Barberry bush. Germination soon starts, and this is followed by the production of a growth of structures like cups. In these cups are produced a vast number of exceedingly small spores and these are widely distributed, many of them settling upon cereals and grass plants generally. These give rise to the well-known orange streaks which, with good reason, fill the farmer's heart with dismay when he sees them. The fungus will, from now onwards, keep on producing a large number of summer spores which will infect any suitable host plants, and how rapidly may be realised when we consider that a whole field may become infected with the rust in a few weeks. As the grain of the cereal starts to ripen, the production of summer spores ceases, and the winter spores, which started the cycle, are developed. The wheat rust is only one out of a host of fungus pests which attack garden and field crops, often with disastrous results. Several useful pamphlets have been published by the Board of Agriculture indicating the best means of dealing with many of the parasitic fungi.

IV.—THE ECONOMIC SELECTION OF FERTILISERS.

By John Hughes, F.I.C., F.C.S., Official Agricultural Analyst for Herefordshire.

The use of manufactured manures or "Fertilisers," as they are now usually called, has become so general that their economical selection is a matter of great practical importance.

It is not simply the actual cost that has to be considered, but whether the fertiliser selected is suitable to the particular soil and the particular crop intended to be grown; as well as the particular period of the year when it is to be applied. It must be obvious that the physical and chemical differences of soils are really very great and demand consideration, and hitherto the question of the composition of the soil has not received the attention which it deserves.

Thus light soils such as sand, gravel or granite require a different kind of fertiliser to heavy soils such as clay or loam. Also chalky soils abounding in lime naturally require a different dressing to vegetable soils such as peat, in which there is a marked deficiency of lime and an excess of vegetable matter of an insoluble acid nature.

Further, the fertilisers themselves vary greatly in their composition and properties, some of them being almost entirely soluble in ordinary water, while others are only partially soluble, and others are practically insoluble.

It would be most unwise to apply very soluble fertilisers to light soils that cannot retain moisture during a period of the year when heavy or continuous rain might be expected.

Also, it would not be economical to apply insoluble fertilisers late in the spring when the crop would naturally require a supply of readily available plant food.

The reason why field experiments with different fertilisers, or mixtures of fertilisers, fail to command general belief in the utility of the results obtained, is largely due to the usual absence of information respecting the chemical composition and physical properties of the soils operated upon.

Farmers cannot ascertain from a perusal of the figures how far similar results may or may not be expected on their own particular soils.

The fine mechanical condition of a soil, in fact a good tilth, has much to do with its fertility, and also with the relative power of the soil to retain moisture and consequently afford available plant food during periods of drought.

Farmyard dung is effective as a general manure for all soils, because not only is it a complete fertiliser supplying all the ingredients of plant food in varying conditions of solubility; but also because it supplies moisture to the young rootlets of the crop as well as the bacteria so essential to the beneficial decomposition of the soil and the promotion of future fertility.

Osmotic action by the minute rootlets of plants, whereby available food is transferred from the soil to the sap of the plant through the medium of the outer membrane of the small roots, is only possible when such membrane is kept soft and active through the presence of moisture.

Hence in a period of drought, when this outer membrane becomes dry and no soluble plant food can pass through it, the crop fails as a natural consequence.

It is well to bear in mind that all plant food derived from the soil must be rendered soluble before it can be absorbed by the roots.

Consequently, when fertilisers which are not soluble in ordinary water are selected, we should take means before making the purchase to ascertain whether the particular soil intended for the application of such fertilisers possesses the requisite solvent action to render them available in reasonable time to the growing crop.

In a general way, we may take it that soils containing a good supply of vegetable matter associated with moisture possess sufficient acidity to effect the decomposition of insoluble fertilisers.

If we determined the extent to which fertilisers are dissolved when treated for a definite time with a solvent of definite and known strength, we should have a quick and convenient method of ascertaining the probable availability of these respective fertilisers.

SOLUBILITY IS USUALLY INDICATIVE OF AVAILABILITY.

If we accept the above proposition all that will be necessary is to fix upon the composition of the standard solvent.

In 1900, the writer suggested a weak solution of citric acid, consisting of 1 part of citric acid dissolved in a 1,000 parts of cold distilled water, for the purpose of illustrating the relative solubility of the newly introduced basic super-phosphate as compared with basic slag.

This solution represents an acidity absolutely below that of the sap of any farm crops, and it has been so favourably received by manufacturers of fertilisers that it is now frequently employed for the purpose of determining the relative solubility of different kinds of phosphatic materials.

The method of treatment is as follows :—

The fertiliser is reduced in the usual manner by grinding in a mortar to the state of a uniform powder, of which 1 gramme is carefully weighed and placed in a large beaker, to which 1 gramme of crystallised citric acid is added, and then 1 litre (1,000 cc.) of cold distilled water is carefully poured in and the solution occasionally stirred during 24 hours, this being a suitable period for exhaustion.

THE SELECTION OF A STANDARD SOLVENT.

In suggesting that a weak solution of citric acid (1 in 1,000) should now be employed as a general solvent for ascertaining the relative solubility of nitrogenous, as well as phosphatic fertilisers, it may be convenient to mention why such a solution has been selected.

Citric acid being of vegetable origin, it is appropriate that it should be employed rather than the much stronger mineral acids such as sulphuric, hydrochloric and nitric acids.

It is true that citric acid does not exist in the soil, but it has been chosen because it can be prepared in a definite strength to imitate the probable solvent action of carbonic acid, which does exist in the soil but is of too evanescent and volatile a nature to be used as a stable solvent of uniform strength.

The earliest use of citric acid as a solvent is due to Dr. Paul Wagner, of the Darmstadt Agricultural Station, who suggested that a 2 per cent. solution should be employed for estimating the solubility, and therefore the probable availability, of basic slag, though no definite reasons were given why such a strength should have been selected.

In this country Dr. Bernard Dyer, after a laborious examination of the acidity of the sap-of 103 different plants, arrived at the conclusion that the average acidity of plant sap might be represented by a 1 per cent. solution of citric acid, and that a solution of that strength might fairly be employed for estimating the extent to which plant food, either in a fertiliser or in the soil itself, might be regarded as soluble and consequently available to the crop.

But Dr. Dyer, in arriving at this conclusion, appears to have overlooked the fact that sixteen of the plants examined, which included the principal farm crops such as wheat, barley, oats, swedes, turnips, mangels, and several grasses, yielded a sap acidity of less than ·50 per cent. Further that the original acidity of the sap must become greatly diluted by contact with the natural moisture in the soil. Thus an inch of rain represents in round numbers 100 tons of water (224,000 lbs.) per acre which at 30 inches per annum amounts to 6,720,000 lbs. per acre a year.

For these reasons the writer preferred to employ a solution of less acidity, but greater volume, because in nature the solutions are very weak while the volume of water in the soil is very large.

This ·10 per cent. citric acid solution (1 in 1,000) is twenty times weaker than that of Dr. Wagner and ten times weaker than that proposed by Dr. Dyer and represents an acidity absolutely below that found in the sap of any of the 103 plants examined by Dr. Dyer.

Consequently it may fairly be claimed that all the ingredients of plant food, such as nitrogen, phosphoric acid, lime and potash, that become dissolved by such a weak solution as ·10 per cent. of citric acid, should be regarded as existing in a form readily available as plant food.

Farmers are aware that phosphate of lime existing in a condition soluble in water is much more valuable than phosphate of lime existing in a form not readily soluble in water; but hitherto it has not been customary to state on invoices the proportions of soluble and insoluble nitrogen compounds in fertilisers, though nitrogen in the former condition is fully twice as available for plant food as in the latter, because soluble nitrogen is at once diffused through the soil so that it comes in contact with the minute fibrous rootlets of the crop.

With a view of illustrating the solvent effect of this weak citric acid solution upon certain well known fertilisers the following tables have been drawn up showing in Table I the extent to which the nitrogen compounds were dissolved and in Table II the solvent action of lime and phosphoric acid.

Table I.

Solubility of nitrogen in a weak solution of citric acid

1 part of Fertiliser.
1 part of Citric Acid.
1,000 parts of Cold Distilled Water.

allowed to stand twenty-four hours with occasional stirring, then filtered and the solution analysed.

Name of Fertiliser.	Containing Nitrogen.	Nitrogen Dissolved.	Equal to Ammonia.
Sulphate of Ammonia	20·36	20·36 =	24·72
Nitrolim	19·05	18·25 =	22·16
Nitrate of Soda	15·65	15·65 =	19·00
Peruvian Guano	9·43	7·24 =	8·79
Fish Guano	8·46	3·46 =	4·20
Dried Blood	13·85	1·65 =	2·00
Meat Meal	5·85	·90 =	1·09
Bone Meal	4·40	·87 =	1·05
Steamed Bone Meal	1·12	·66 =	·80

Though sulphate of ammonia and nitrate of soda are readily dissolved in ordinary water, they have been included in Table I in order to show their great solubility compared with other nitrogenous compounds.

Nitrolim, which comes next, is better described as Calcium Cyanamide, a new fertiliser prepared from lime and nitrogen absorbed from the air. It is a dark powder, and, on account of the large amount of free lime it contains, possesses a strong caustic action, which may make it additionally useful as an insecticide when applied as a top dressing. On account of its richness in available nitrogen combined with 52·02 per cent. of lime it is likely to become of great use as a spring dressing on soils deficient in lime.

Peruvian guano, when treated by the proposed standard solvent, comes out very well, for nearly 80 per cent. of the nitrogen and fully 93 per cent. of the phosphate of lime are apparently available as plant food.

These figures demonstrate what a very valuable natural fertiliser Peruvian guano really is, and also suggest that on account of its solubility its use should be confined to the spring and summer months.

Fish guano, though sold under a misleading name, consists simply of dried fish, and it appears to be more soluble than might have been expected, 40 per cent. of the total nitrogen having been dissolved.

The effect of the solvent on dried blood goes to show that this manure has hitherto been generally much over-rated when compared with its high cost. For, though containing 13·85 per cent. of nitrogen, only 1·65 per cent. is dissolved after twenty-four hours treatment, while the figures for lime and phosphoric acid are quite negligible. Evidently the temperature at which the blood has been dried has rendered the nitrogen very insoluble, so that time, heat, and moisture would be necessary to render such a material available as a fertiliser.

Under these circumstances, it must be obvious that dried blood cannot be regarded as a quick-acting fertiliser suitable for spring use but rather as a slow acting one suitable for autumn application.

Meat meal and bone meal only show respectively 16 and 19 per cent. of nitrogen dissolved, but in steamed bone meal, though the total figures are only 1·12, yet ·66 or nearly 60 per cent. of the nitrogen is dissolved.

In the following Table II the respective fertilisers have been arranged according to their solubility in regard to phosphoric acid equal to tribasic phosphate of lime.

Steamed bone meal heads the list with 43·33 per cent. of phosphate of lime, the figures for lime, however, only being 26·32. Hitherto this fertiliser has not been appreciated according to its merits, but it is now being purchased much more freely than formerly; and at £4 15s. a ton, carriage paid, it is certainly cheap.

TABLE II.

Solubility of phosphoric acid and lime in similar ·10 per cent. citric acid solution after 24 hours exhaustion.

Name of Fertiliser.	Containing Phosphate of Lime.	Phosphoric Acid Dissolved.	Phosphate of Lime Dissolved.	Lime Dissolved.
Steamed Bone Meal..	56·86	19·85 =	43·33	26·32
Bone Meal	49·44	14·85 =	32·42	19·15
Superphosphate ..	30·00	13·70 =	29·90	26·37
Limphos	41·58	13·25 =	28·92	25·64
Meat Meal	37·88	12·80 =	27·97	16·18
Peruvian Guano ..	28·81	12·30 =	26·85	8·17
Basic Superphosphate	27·50	12·00 =	26·19	34·05
Basic Slag	38·97	8·70 =	18·99	22·17
Fish Guano	18·01	6·85 =	14·95	8·51
Algerian Phosphate ..	55·99	6·35 =	13·86	13·66
Dried Blood	1·60	·19 =	·41	1·23
Nitrolim	—	—	—	52·02

Bone meal comes next, yielding 32·42 and superphosphate 29·90. The fertiliser known as Limphos, with an acid reaction, yields 28·92 phosphate of lime, of which about 17 per cent. is soluble in water alone.

Meat meal yields 27·97 and Peruvian guano 26·85. Then comes basic superphosphate, which was introduced in 1900 and is prepared by adding caustic lime to ordinary acid superphosphate in sufficient quantity to neutralise the original acidity and convert the monocalcic, or water soluble phosphate, into di-calcic or citric soluble phosphate.

This fertiliser was manufactured specially for use on soils deficient in lime and deficient also in vegetable matter, and it will be noticed that while yielding 12 per cent. of phosphoric acid, equal to 26·19 per cent. of phosphate of lime, it also supplies 34·05 per cent. lime, which is considerably higher than is yielded by any of the other phosphatic fertilisers. Basic slag shows 18·99 phosphate of lime, Algerian phosphate 13·86 and dried blood only ·41 per cent.

Nitrolim, though not containing any phosphate of lime, has been included in the list on account of its large yield of lime, 52·02, combined with its large yield of 18·25 nitrogen soluble in the ·10 per cent. citric acid solution.

Fertilisers such as turnip, mangel, cereal and hop compounds have not been included, nor samples of dissolved bones, because the results would vary according to the composition, but there would be every advantage in submitting these fertilisers to the action of the standard solvent of ·10 per cent. citric acid solution.

Indeed, it must be obvious that nitrogenous as well as phosphatic fertilisers should be valued according to their solubility; for plant food in order to be available must be first rendered soluble, before it can be absorbed by the process of osmosis through the fibrous roots of the crop.

It has been shown that the solubility of the fertilisers examined varies enormously, therefore it is only reasonable that their agricultural value should vary accordingly. It is not reasonable or fair that nitrogen should be valued and paid for at one uniform rate irrespective of its source of origin or its relative solubility.

POTASH SALTS.

On good arable land, rich loams and stiff clays, potash salts are seldom applied, but on light soils their necessity is now fully recognised, so that complete fertilisers generally contain from 4 to 6 per cent. of actual potash.

Potash for agricultural purposes is applied as sulphate of potash, muriate of potash and kainit salts. The two former contain about 50 per cent. of potash and the latter 12 per cent. . Potash in the concentrated form of nitrate of potash is sometimes used in the preparation of high-class tobacco manures for export, while carbonate of potash is occasionally used in the growth of grapes.

All salts of potash being readily soluble in ordinary water, there is no necessity to employ the proposed new citric acid standard solvent for the purpose of differentiating their relative solubility. Naturally, being soluble in water, they should be applied only during the spring and summer months.

Kainit salts, when originally introduced into this country from Germany, contained a considerable quantity of muriate of magnesia, or chloride of magnesium as it is more usually described, which exerted injurious and poisonous effects on the delicate fibres and rootlets of plants, so that it was best applied during the winter months before the crop was sown.

Now, however, this injurious ingredient has been eliminated from the kainit as imported so that this cheap source of potash can be applied, like the more concentrated muriate and sulphate, during the spring.

THE SOIL SHOULD INFLUENCE SELECTION OF FERTILISERS.

Having now fully described the method of employing the proposed standard solvent, and having recorded the figures obtained by its application to the materials used in the manufacture of compound fertilisers, it will be convenient to consider how far the nature and chemical composition of the soil should influence the selection of the fertiliser which is likely to be most suitable to the particular soil.

The points to be first ascertained may be grouped under the following headings:—

1. What is the mechanical condition, is the soil heavy or light, stiff or porous?
2. What are the retentive properties as regards moisture?
3. Does the soil contain much or little vegetable matter?
4. Does the soil contain plenty of lime or not?

The mechanical condition is of the greatest importance, for soils that are in a coarse rough state will not respond fully to liberal manuring, and it is better to spend money first in tillage operations, with a view of getting a fine tilth, than to spend money in the application of costly fertilisers; indeed, handling the soil was originally the only form of manuring, for this term is derived from the Latin *Manus* = a hand.

If the soil is fairly stiff it can retain soluble dressings, but, if porous, such as sandy or gravel soils, soluble dressings should be very cautiously employed and only applied during spring and summer.

The retentive properties of the soil as regards moisture should be considered in connection with the question of its richness in vegetable matter, generally known under the term of humus; because when the soil contains much water and much vegetable matter it possesses strong solvent properties, rendering available, as plant food, fertilisers that naturally are not soluble or available.

Lastly, the richness of the soil in lime practically decides the important point whether acid or alkaline phosphatic fertilisers may be applied.

Good Arable Soils.

If the land contains plenty of lime, namely, over 5 per cent. such as is found in most of our good arable land, then acid manures such as superphosphate, dissolved bones, limphos and similar preparations, may be selected with confidence, because such fertilisers, being readily soluble in water, are more fully and evenly distributed in the soil, while their natural acidity becomes neutralised by the plentiful supply of lime, which is essential before the phosphate of lime can be absorbed with advantage to the crop, for no acid combination can enter into plants without doing them serious damage.

DAMP, STIFF CLAY AND VEGETABLE SOILS.

On these soils acid manures are quite unsuitable, and it is fortunate that phosphate of lime can be applied in an alkaline form as existing in the now well-known basic slag, which, though only containing from 2 to 3 per cent. of actual free lime, contains fully 40 per cent of lime in combination with phosphoric and silicic acids in such proportion as to impart a strong alkaline or basic character to the finely ground dark powder.

Excessive moisture and excessive vegetable matter are the two great factors that have caused basic slag to become so popular with farmers in certain districts.

Indeed, it is the combined existence of these two factors that have rendered this fertiliser effective even on the chalky South Downs of Sussex, as the writer has himself testified to after a visit to the farm of Mr. Passmore of Applesham near Shoreham.

It should be remembered that basic slag is but little soluble in ordinary water, 1,000 parts of water dissolving only 6·60 parts of slag containing 4·70 of lime, whereas 1,000 parts of the ·10 per cent. citric acid solution dissolves 38·80 parts of slag containing 22·17 per cent. of lime, and however finely it may be ground basic slag consists of a hard fused material, and it is not ordinary water but water largely impregnated with vegetable acids that is capable of dissolving it and rendering it available as plant food.

LIGHT, SANDY AND GRAVELLY SOILS.

Soils such as the above-named are in a fine mechanical condition and naturally well drained, from their porous character, are just the soils that respond liberally to judicious manuring.

On such land, bone meal, meat meal and fish guano are very suitable as general fertilisers, supplying nitrogen as well as phosphoric acid, but, if purely phosphatic fertilisers are required, it is not desirable to apply acid manure, such as superphosphate, because sandy, gravelly, and granite soils are deficient in lime. Again, such soils being deficient in vegetable matter, and usually not damp, basic slag would not be suitable; of which fact farmers in many localities are perfectly aware.

It is on this kind of light land that steamed bone meal and basic superphosphate, which is often referred to as precipitated phosphate, have been found so suitable, the former being preferred where Phosphates are desired, and the latter where lime as well as phosphoric acid is specially required as in the case of turnips and swedes. On reference to Table II, it will be seen that, while steamed bone meal shows 26·32 lime dissolved by standard citric solution, basic Superphosphate shows 34·05 per cent., and lime in a readily available form is most essential for root crops, and also, in an autumn dressing, for clover seeds.

HOW FAR SHOULD THE CROPS INFLUENCE SELECTION ?

Having now pointed out very fully the great importance of considering the character and composition of the soil when selecting fertilisers, it may be useful to bear in mind that the kind of crop intended to be grown should also be considered.

Where grazing land is to be dressed, probably basic slag, basic superphosphate or superphosphate will prove the most economical application, the particular phosphate being chosen according to the composition of the soil.

On old meadow land there is usually an accumulation of nitrogen in the form of humus, so that nitrogenous fertilisers are not necessary.

On grass land which is mown and the grass is carted away in the form of hay, some nitrogenous fertiliser should be associated with the phosphatic one, and in such cases Peruvian guano or finely prepared vitriolized bone meal will materially promote the yield of hay.

Cereal crops, such as wheat, barley and oats, if only the grain be sold off the farm, cannot be regarded as exhausting the land to any appreciable extent, as will be seen from Table III.

It is the root crops, such as turnips, swedes and especially mangels that make the greatest demand upon the available plant food in the soil, and therefore it is to these crops that manure, either natural, in the form of farmyard dung, or manufactured, in the form of the various fertilisers already alluded to, should be applied.

In the following Table III, the quantities of the four chief manurial ingredients removed per acre by the respective farm crops are set out.

It will be noticed that the cereal crops, wheat, barley and oats, remove really very small quantities of the four important ingredients, so far as the actual grain is concerned, and the straw under ordinary circumstances should be returned to the soil. Though the figures for nitrogen in the three corn crops are very similar, it should be remembered that wheat is usually sown in October or November, but barley, and frequently oats, are not sown until March or April, so that these spring crops have a very much shorter time to obtain the requisite nitrogen and therefore stand more in need of artificial help than wheat.

Indeed, where wheat follows a good crop of clover seeds, no artificials are required except a dressing of 1 cwt. per acre of nitrate of soda during the showers of April.

Corn crops remove much more phosphoric acid than lime, and in this respect present a striking contrast to turnips and swedes which remove more lime than phosphoric acid.

As regards potash, the requirements of corn crops are small, the actual amount in the grain being only half that existing in the straw, and, as good arable soils usually contain sufficient clay capable of yielding the requisite amount of potash, it is not necessary that potash should be included in fertilisers intended for corn, except, perhaps, on very inferior sandy soils.

TABLE III.

Important constituents removed per acre.

	Nitrogen.	Phosphoric Acid.	Lime.	Potash.
	lbs.	lbs.	lbs.	lbs.
Wheat, 30 bushels	33	14·4	1·0	9·7
Straw	12	8·4	9·2	18·2
Barley, 40 bushels	34	15·1	1·2	10·1
Straw	12	4·9	8·5	23·7
Oats, 45 bushels	38	11·8	2·0	8·5
Straw	14	7·1	9·8	29·6
Meadow Hay, 1½ tons.. ..	49	12·7	28·1	56·3
Clover Hay, 2 tons	102	25·1	86·1	87·4
Beans, 30 bushels	77	22·3	2·9	23·0
Straw	22	9·2	30·2	58·1
Turnips, 17 tons	71	22·4	25·5	108·6
Leaf	49	10·7	48·5	40·2
Swedes, 14 tons	74	16·9	19·7	63·3
Leaf	28	4·8	22·7	16·4
Mangels, 22 tons	96	34·0	24·2	191·6
Leaf	51	15·1	29·1	71·4
Potatoes, 6 tons	47	24·1	2·9	75·4
Haulm	20	2·7	22·7	1·1

Meadow hay and clover carry off much larger quantities of the valuable constituents, as will be seen from an examination of the above table, so that where grass land is regularly mown it is desirable to supply a generous dressing of a fairly complete fertiliser containing all the important ingredients. Hence Peruvian guano, supplying nitrogen, phosphates and potash in well balanced proportions, furnishes a very useful top dressing.

As regards clover, however, it should be remembered that this crop possesses the faculty of absorbing nitrogen from the air, and that, as the roots underground extend in proportion to the stems above ground, a large crop of clover removed from the surface represents a correspondingly large accumulation of plant food in the roots. Consequently the following crop of wheat will not require much additional artificial assistance.

Beans and peas being leguminous crops can generally support themselves.

Coming now to the root crops, we have the crop in rotation that should receive all the possible help in fertilisers that can be afforded.

There should be good farm-yard dung applied to the surface and artificials applied through the drill at seed time, because it is most essential that the young plant should get an early and vigorous start.

Mangels, it will be seen, are particularly exhausting if large crops are grown. Meat meal, fish guano and bone meal will supplement the previous dressing of dung, and perhaps will be more suitable than exclusively phosphatic fertilisers such as superphosphate, basic superphosphate, limphos or basic slag, because mangels like plenty of nitrogenous organic matter.

Lastly, we have potatoes, which do best on light loams, granite and sandy soils. In Jersey, where such large crops of early maturity are obtained, the fertiliser which answers best is a compound containing 16 per cent. soluble phosphate, 7 to 7½ ammonia derived from sulphate of ammonia, and 4 of potash derived from sulphate of potash, sown with the seed along the open drills. Lime does not appear to be at all essential as the best potato land is usually deficient in lime.

In Lincolnshire, and other localities where potatoes are planted much later and ordinary farm-yard dung is largely used, the artificial fertilisers are not so rich in ammonia.

CONCLUSION.

The writer has endeavoured to point out that the economic selection of fertilisers necessitates the consideration of several points in addition to the question of actual cost.

In the first place, having determined upon the particular crop to be produced, consult Table III with a view of ascertaining what are the chief ingredients of plant food required by such crop.

Secondly, estimate how far the particular soil is likely to supply such ingredients naturally; and how far it will be necessary to supplement any deficiency in the soil by the addition of prepared fertilisers.

Lastly, by reference to Tables I and II, select the manure which shall be most suitable to the soil and, at the same time, shall contain the ingredients of plant food in the proportions required by the proposed crop.

If these suggestions are carefully observed by any experienced farmer, the results obtained in a practical experiment in the field will afford a good illustration of the advantage to be gained from the carrying out of scientific research.

V.—BEES IN FIELD AND GARDEN.

By Harold Bastin (Author of "Insects; their Life-Histories and Habits.")

Bees belong to the great natural division, or "order," of insects known as the Hymenoptera. In common with most of their allies. they possess four membranous wings which are usually transparent. never very large, and of which the nervures, or "veins," are never very numerous. The first pair of jaws, or mandibles, are always present as biting organs, even when the other mouth-parts are greatly modified for licking and sucking.* Metamorphosis is complete: *i.e.*, the egg discloses a more or less helpless larva, or "grub," which, when full-fed, passes through a quiescent pupal stage ere it reaches the adult condition. Another very interesting character of the Hymenoptera is that (except in some small species) the two wings of each side are united during flight by a series of minute hooks, on the front edge of the hind-wing, which engage with a corresponding fold in the fore-wing (Figs. 1 and 2). These hooks can only be seen through the microscope; but their presence may readily be demonstrated by pulling forward the wings of a dead bee. The hind-wing will be seen to move in unison with the fore-wing, to which it seems mysteriously to adhere.

The above-cited characters are common to all, or nearly all, the Hymenoptera; but when we critically examine bees, we find that they display numerous peculiarities of structure which are not found in any other insects. These peculiarities in detail will be pointed out in subsequent paragraphs. It may be said at once, however. that they almost all have reference to the activities of bees in relation to flowers. All bees feed exclusively upon nectar and pollen, and supply these substances to their young. They are thus more intimately associated with flowers than any other insects. The significance of this fact from the standpoint of the farmer and gardener can only be fully appreciated in view of the processes of reproduction which obtain among the higher plants. Every schoolboy is taught nowadays that the flowers of a plant are its reproductive organs; that the essential parts of the flower are its pistil and stamens; and, further, that the gaudy petals of a flower are really leaves which have been modified to act as advertisements calculated to attract insects. He is also told that the nectar which so many flowers secrete is to be regarded as a kind of bait, an additional allurement to the small winged emissaries of Cupid which convey the fructifying pollen from one blossom to another. Save for the wind, which in the case of certain plants is the chief carrying agent, this process of cross-pollination depends almost entirely upon the constant passage of insects from one bloom to another. In favourable circumstances, the transfer of pollen from the stamens of one flower to the pistil of another flower borne by a distinct plant of the same, or a nearly related, kind, results in cross-fertilisation with its immediate stimulating effect upon the output, or seed, of the plant concerned. Whether continued cross-fertilisation is, in the long run, likely to promote the best interests of the plants themselves in their endless " struggle for existence " with other species need not concern us here. But it has been proved beyond question that the process frequently results in enhanced fruitfulness, and at the same time the balance of the plant's hereditary tendencies seems, as it were, to be rendered unstable, with the sequel that new and possibly valuable varieties are produced. We must not forget, however, that insects do not only effect cross-pollination. Indeed, a bee, when busy in a blossoming orchard, spends most of its time among the branches of one tree (a fact which the reader may readily verify by observation); so that its acts of cross-pollination must be few and far between. But it is constantly effecting self-pollination as it passes from flower to flower on the same branch, or by transferring the pollen from the stamens to the pistil of the same bloom. In so doing it still promotes fruitfulness; for, while undoubted cases of what is called " self-sterility " exist, especially among the artificially established varieties of cultivated plants, it may nevertheless be laid down in general terms that habitually self-pollinated plants succeed well enough, especially if they receive an occasional fillip of cross-pollination to save them, so to say, from falling into a rut.

---

* **Note:** The typical insect has three pairs of mouth-parts, or "jaws," which are termed, in order of their arrangement, mandibles, first maxillæ, and second maxillæ. These move transversely, with a nipping action, like pairs of pliers held vertically.

Authorities are not fully agreed as to the probable course of events which, in remote ages, led up to the present intimate relations that exist between flowers and insects. Perhaps we shall not greatly err if we assert that insects first visited flowers for the sake of the pollen. Subsequently, the brightly coloured petals, the perfumes, and above all the nectar-distilling glands of flowers were called into being by a slow process of evolution. Even to-day there are flowers, such as the wild rose and the poppy, which secrete no nectar. They produce a superabundance of pollen, doubtless to supply the place of that which their insect visitors devour. The importance of nectaries from the point of view of the flower seems to consist in the fact that they provide an alternative repast for insects, thus enabling the plant to economise in pollen production. Indeed, many insects (such as butterflies) nowadays frequent flowers solely for the sake of the nectar which they yield, and eat no pollen at all: and we must not overlook the fact that pollen eaten by insects is pollen wasted so far as the plants are concerned. To put the matter familiarly, the plants tolerate the plunder of their pollen for the sake of the fertilisation of the relatively few grains which, thanks to the active movements of insects, and subject to the law of average, are destined to serve their legitimate office.

Bees, as we have seen, avail themselves to the full of the banquets which the flowers provide, feeding both upon nectar and pollen as their needs dictate. Many species of wild bees are by no means unimportant in the influence they exert upon the fruitfulness of cultivated crops; but, for the moment, we may fix our attention upon the domesticated honey-bee (*Apis mellifica*)—Fig. 3—and its near kindred which usually constitute the majority among flower-visiting insects in the fields, orchards and gardens of the British Islands (Fig. 1, A, B and C). The so-called "worker" bee, often referred to as a "neuter," is really a specialised female, with all the native shrewdness of her sex greatly augmented. She alone gathers nectar and pollen, for the queen (or fertile female) and the drones (or males) are concerned solely with the upkeep of the hive's population. For her labours among the flowers the worker is wonderfully equipped (Fig. 4). Her mouth-parts (save for the mandibles proper) are so modified that they form, when in conjunction, a marvellous suctorial apparatus, or proboscis, which is often referred to as a "tongue." With this appliance, the worker probes the depth of the flowers, and pumps up the sweet juices from their nectaries. The spoils thus extracted pass into a kind of pouch (the "honey stomach"), where they undergo chemical changes consequent upon admixture with peptic secretions, and whence they are eventually regurgitated into a waxen cell after the insect's return to the hive. Subsequently, the nectar—which now begins to merit the term "honey"—undergoes a further process of ripening and concentration; and until this is complete the bees delay to seal down the cell. All these fascinating facts, and many more, are well known to every bee-keeper; and it is with the pollen-gathering activities of the bee that we are now chiefly concerned. Bees collect pollen in the first instance among the hairs of their bodies and legs, sometimes incidentally, sometimes by a deliberate process of wallowing among the stamens of a flower. Many of their hairs are curiously twisted and minutely branched or feathered, (Fig. 5) so that the pollen grains adhere to them in large numbers. When a bee has become thoroughly powdered with pollen, it usually hovers in the air, and rapidly rakes the grains from its hairs by means of its "pollen combs" (Figs. 6 and 7). The latter have their place upon the inner surface of the proximal segment of the hind foot, or tarsus, which in bees is remarkably large and broad and is known technically as the metatarsus or planta. The "combs" consist of ten transverse rows of stiff hairs which may easily be made out by the aid of a pocket lens. From the combs, the pollen is transferred to the corbiculæ, or "pollen baskets," one of which is situated on the inner surface of each hind tibia, or shin. The term "basket" is scarcely a happy one, however, seeing that the utensil in question consists of a depression rimmed with rather long, stiff hairs. After a successful expedition, the bee returns to the hive bearing a large mass of pollen upon each corbicula (Fig. 8).

The precise manner in which the bee transfers pollen from its combs to its corbiculæ has formed the subject of no little discussion. The process is very rapid, and is usually performed in the air, so that the difficulties in the way of satisfactory observation are very great. Many authorities assert that the bee, by crossing its legs, transfers the pollen from one set of combs to the basket of the opposite leg, the stiff hairs at the margin of the metatarsus serving to scrape the pollen from the combs. But Mr. F. W. L. Sladen, who has paid much attention to the subject, holds a different view. In his recently published work* he has the following interesting passage: "My own belief is that the pollen is scraped off the metatarsal brush (*i.e.*, the pollen combs), by a comb, situated at the end of the tibia on the inside, into a concave receiver there. When the leg is straightened, a projection on the metatarsus called the auricle (Fig 9) enters the receiver, compresses the pollen, and pushes it out on to the lower end of the corbicula, where there is a break in the surrounding wall of hair, and plasters it to the mass of pollen already collected in the corbicula. Finally, the metatarsus of the middle leg is used to pat the pollen down on the corbicula. This opinion is supported by (1) the structure of the parts, (2) the fact that when the bees are collecting pollen from the flowers they rub their hind-legs together in a longitudinal direction and do not cross them, and (3) an examination I made of the load of a honey-bee, which consisted partly of white and partly of orange-coloured pollen. The orange pollen (which had evidently been gathered last, because the metatarsal brushes were filled with orange pollen) was found only on that part of the corbicula that was nearest to the auricle, where it had been forced in as a wedge between the white pollen and the corbicula, causing the whole mass of pollen to swell and rise and also to buckle in the middle. The outer side of the lump of pollen was tinged on the surface with orange, showing where the metatarsus of the middle leg, which bore orange pollen grains, had patted it."

---

* The Humble-Bee. Macmillan & Co., Ltd. 1912.

This quotation is given for the information of those who may be specially interested in the problem upon which it bears. It is quite obvious, however, that the pollen which the bees comb out of their hairs, pack upon their corbiculæ, and ultimately convey to the hive, can be of no service to the agriculturist. But the bee cannot reach all parts of its body with its legs, and some pollen is sure to be left sticking to the hairs. These stray grains are likely to be deposited upon the stigmatic surface of the pistil as the bee is busily engaged in pillaging a flower, and fertilisation of the ovum may thus be effected. Indeed, in the case of many flowers, the parts are so contrived that pollination by a visiting insect becomes almost a certainty.

The evidence that bees do, in fact, promote the fruitfulness of many cultivated crops is not far to seek, and is nowadays admitted by all farmers and gardeners who have paid any attention to the subject. Many instances, based upon careful observation, might be cited, but a few typical ones must suffice for our present purpose. Mr. T. W. Cowan, the well known authority on honey-bees and their ways, has the following convincing passage: "Some years ago Lord Sudeley started fruit orchards at Toddington, and for some time they were quite unproductive; in fact it was a question of giving them up. It was suggested that bees would be of use, and a Scotch bee-keeper was engaged to take charge of an apiary on the spot. The result was that the fruit trees very soon showed the difference and became remunerative. The trial was so successful that the orchards were enlarged, and a large jam factory was established to preserve the fruit. There were 200 colonies in this case assisting the fruit grower which turned an unproductive orchard into a very productive one."

"Another example is in California. I happened to be visiting Mr. Butler of Penryn, California, and he showed me over his ranch, where he had forty acres of peach trees. He complained that the early Alexander peach, which is a very good one, was a very shy bearer; in fact he said that it was such a poor bearer that he intended to grub up all the trees and replace them with Hale's Early. The trees were a fine sight, some 15 or 20 feet in diameter, and as they were in full flower they made a grand show. We examined the trees, and I noticed that there were no bees about; in fact, looking at a number of trees I only occasionally saw a wild bee. It at once struck me that it was the want of bees that was the difficulty, and that, perhaps, if there were plenty of them the trees might bear better. I asked how far away was the nearest bee-keeper, and was told five miles. This, of course, was no use, as the country is covered with ranches and bees at that distance would not do any good at Penryn. I recommended Mr. Butler to try a couple of hives to begin with, and to get them placed among the trees at once. This was done, and the benefit was felt the very same year. We were asked there in June, and Mr. Butler showed me his trees and said that it was the first time he had had so much fruit and that he was quite satisfied it was due to the bees. He was so pleased that he got some more hives, and the following year the trees bore so abundantly that the fruit had to be thinned. In this case, also, an unproductive ranch was converted into a productive one. This was not all, however, for the neighbours also began to feel the benefit and small fruits that were not very profitable began to yield sufficiently to become profitable."

"There is another aspect in connection with the fertilisation of fruit trees in which bees are indispensable. It is well known that some are self-sterile, and require pollen brought to them from another tree to make them fertile. A tree is self-sterile if it cannot set fruit unless planted near other varieties. An indication of self-sterility is the continued dropping of young fruits, and is generally overcome in California by planting other varieties among the self-sterile ones. Cross-pollination is thus obtained by means of bees or other insects, but, as at the time of fruit blossoming there are twenty bees to any one other insect, it is evident that cross-pollination is principally dependent on them. Even with fruits that can fertilise themselves, it is an advantage to have cross-pollination, as the result is larger and finer fruit."

Bush fruits are no less dependent than orchard trees upon the visits of bees. Some years ago, Mr. Walter F. Reid demonstrated this fact by a striking series of experiments with gooseberries and currants. He enveloped the bushes in muslin before the blossoms had opened, thus protecting them from the visits of bees. In one instance a small gooseberry bush yielded only six fruits, and even these were probably due to the activities of a raspberry beetle which was enclosed in the muslin by mistake. Two adjoining

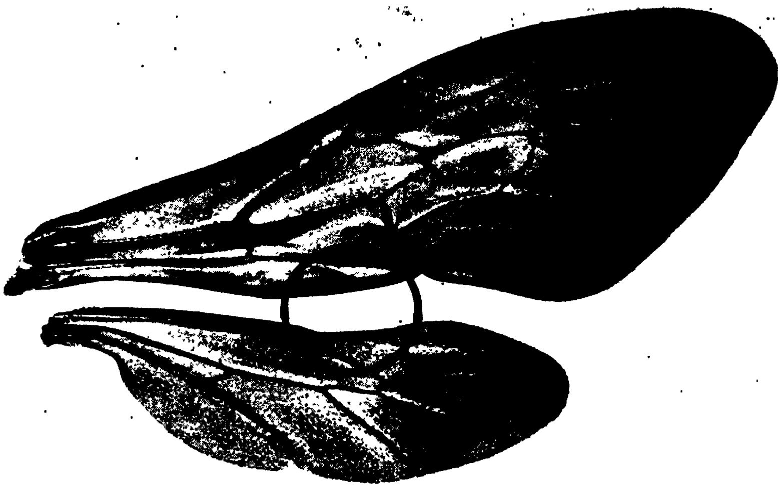


Fig. 1 Wings of a Humble-Bee.
(The circle indicates the area shown below magnified.)

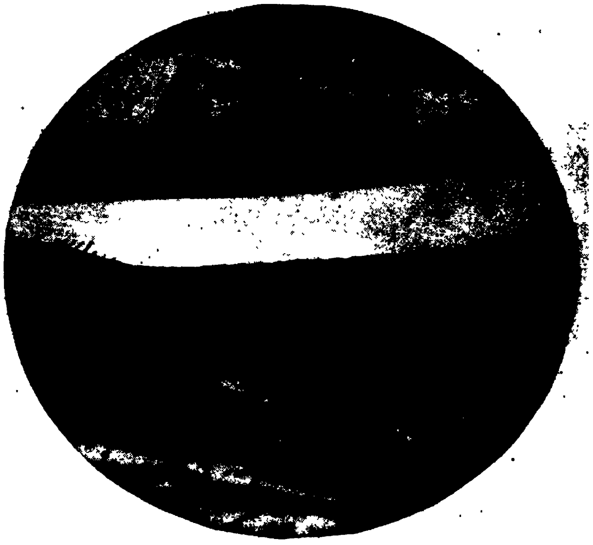


Fig. 2 Part of the Fore and Hind Wings of a Humble-Bee.
Greatly magnified to show the row of hooks on the front edge of the hind-wing.

*

Fig. 3 Hive or Honey-Bee (*Apis Mellifica*).
A. Queen. B. Worker C. Drone or Male.

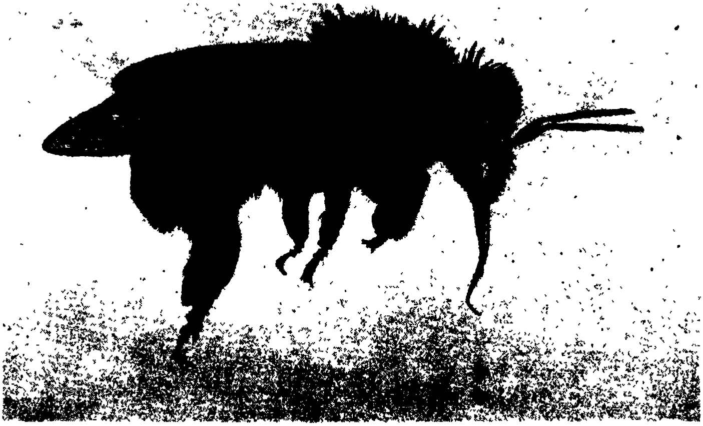


Fig. 4 Honey-Bee from side (magnified) showing structure, large proximal joint of the Tarsus and the Tongue.

**

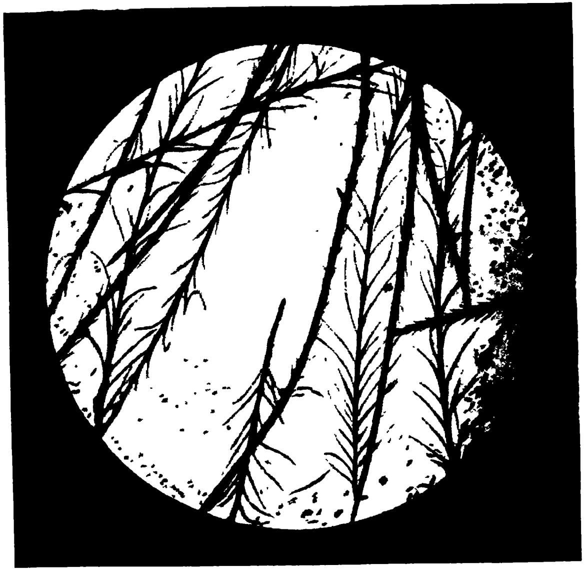


FIG. 5 - HAIRS OF A HUMBLE-BEE, greatly magnified to show their feathered structure.

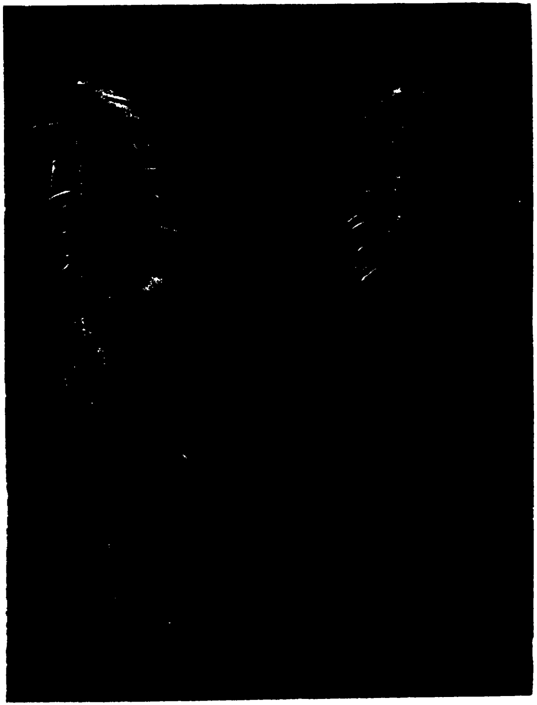


Fig. 6. - TIBIA AND TARSUS OF THE HONEY-BEE. (Outer and inner aspects. A. Pollen Basket. B. Pollen Combs.

(From "Insects, their Life Histories and Habits," by permission of Messrs. H. C. & E. C. Jack.)

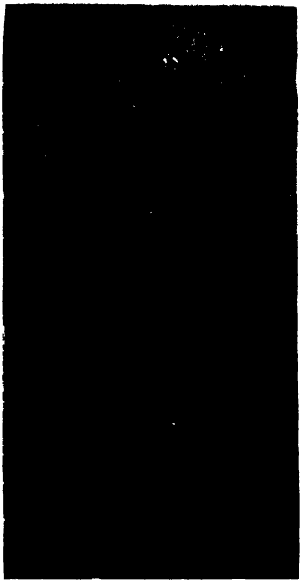


Fig. 7 Hind-Leg of a Humble-Bee.
A. Pollen Combs.

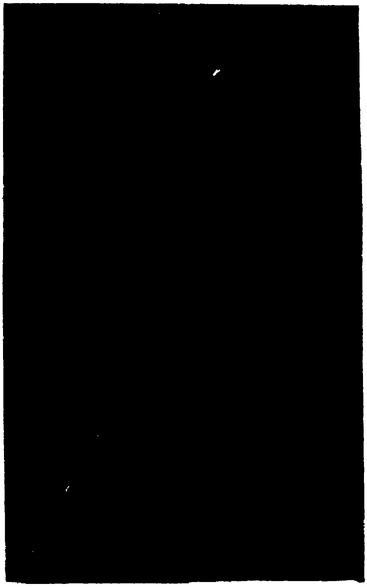


Fig. 8 Hind-Leg of a Humble-Bee, the corbicula carrying a load of red clover pollen.

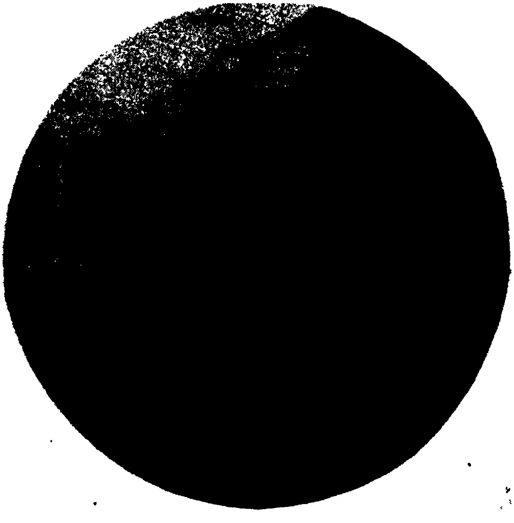


Fig. 9—Juncture of Tibia and Tarsus of Hind-Leg of Honey-Bee.
A. Auricle. C. Comb at the end of Tibia.

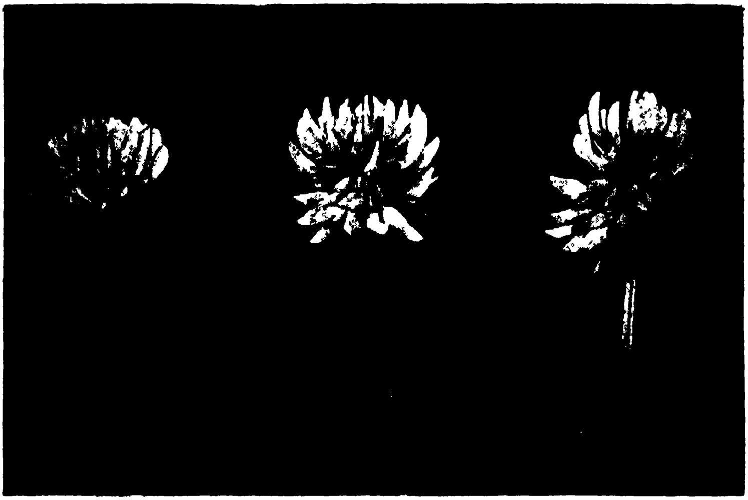


Fig. 10 - Stages in fertilisation of Clover Blooms by Bees.

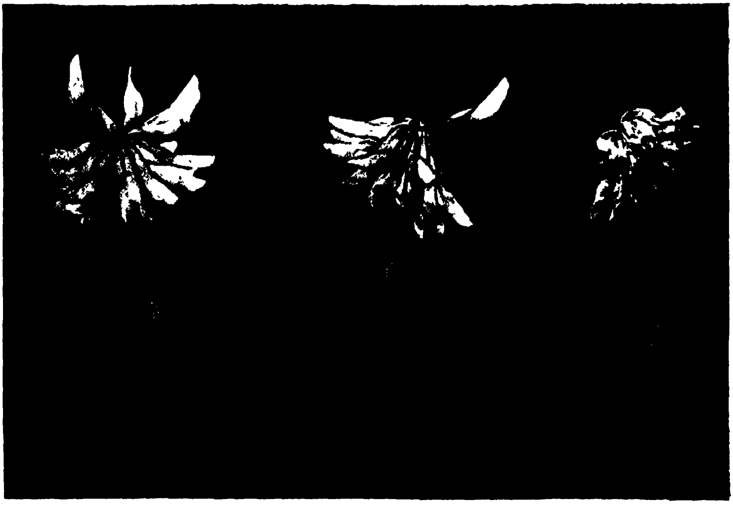
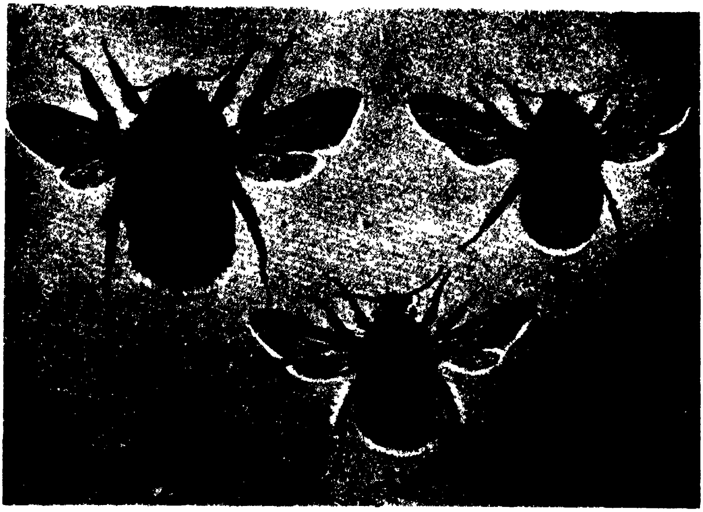


Fig. 11 - Stages in fertilisation of Clover Blooms by Bees.

 Fig. 12 Humble-Bee (*Bombus terrestris*).
A. Queen. B. Worker C. Drone or Male.

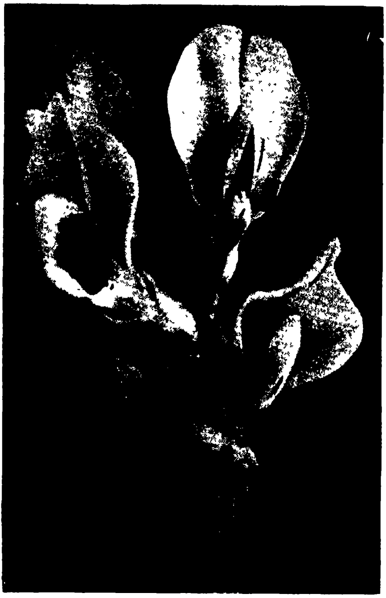


Fig. 13 Flowers of Broad Bean, showing the entrance to the nectary designed by nature.

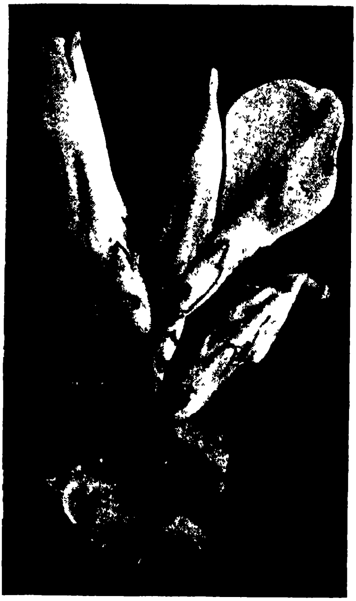


Fig. 14—Flowers of Broad Bean, showing holes bitten through calyces by Humble-Bees.

bushes, of similar size and age, which were left open to the bees that came from hives about fifteen yards distant, produced respectively 151 and 167 fruits. Mr. Reid's experiments with black and red currant bushes gave equally convincing results in proof of the importance of bees as fertilising agents.

While fruit growers and gardeners undoubtedly owe much of their prosperity to bees, farmers are also beholden to these busy brown insects. This is notably the case in regard to the white or Dutch clover-plant which is admittedly of great value to stock owners. Enormous quantities of white clover seed are offered annually at Mark Lane, and in the first instance bees are almost entirely responsible for this supply. White clover is quite unable to set its seed without insect assistance, and although certain flies and butterflies often visit the flowers, observation has shown that they rarely pollinate the stigma of the pistil. The form and size of the white clover bloom renders it especially susceptible to the blandishments of bees, which readily effect cross-fertilisation. Many years ago, Darwin conducted experiments which showed that twenty heads of white clover protected from bees set not one seed, whereas twenty heads left exposed yielded 2,290 seeds—an average of 114 seeds for each flower-head. It is true that the white clover is visited by a few of our smaller wild bees, and that they are responsible for a percentage of the seed that is produced; but it is equally true that for the bulk of the yield farmers must thank honey-bees.

Very interesting is the manner in which the white clover responds to the visits of the bee (Figs. 10 and 11). The flower-head is a compact mass of small blooms, each complete in itself. The blooms of the outer circle mature first, and as each one is visited by a bee, and gets its stigma pollinated, it rapidly withers and dries up, while its stalk bends downwards. The next day the blooms of another circle expand and solicit the attention of their insect helpers. This process continues until every bloom has had at least a fair chance of setting its seed. When we are cognisant of these facts, it becomes an easy matter to distinguish between the blooms of a clover head which have set their seed, and those which are still awaiting the visits of bees; and there can be no doubt that this wonderful arrangement whereby each bloom rapidly alters its position as soon as pollination of its stigma has been effected is of the utmost importance. Bees are proverbially busy, and many facts might be adduced to show how anxious they are to save time. They hurry from flower to flower as if each were in competition with all the other denizens of the hive. The instinctive aim of the individual bee is to fill her honey stomach and pollen baskets in the shortest possible time. Bearing these facts in mind, it is easy to perceive the value of the movement which takes place with clock-like precision among the crowded blooms of the white clover head. The bee is relieved from the necessity of investigating those blooms from which the nectar and pollen have already been removed, instinct telling her that those which point upwards will reward her search, while those which point downward have already been plundered of their sweetness.

While honey-bees are invaluable to the farmer as fertilising agents of the white clover, they are of little service to him where the red clover is concerned. The latter plant relies upon the aid of the various species of humble-bees (Fig. 12) which have a " tongue " sufficiently long to penetrate its floral tube, although it is said that after red clover has been mown, the flowers of the second crop may be abnormally small, and that these may be visited and pollinated by honey-bees. Such visits, however, must be comparatively unimportant, and there can be no question that the bulk of red clover seed results from the labours of the humble-bee. The complete dependence of this plant upon the visits of insects was also demonstrated by Darwin, who showed that 100 protected flower-heads set not a single seed, whereas 100 heads to which humble-bees had access produced 2,700 seeds. When red clover was first introduced into New Zealand the crops yielded little or no seed. Living humble-bees were subsequently imported into the country, where they have now established themselves, with the result that the cross-pollination and consequent seed-setting of the red clover is duly accomplished.

In view of the fact that humble-bees render indispensable service to the plant, Darwin remarked : " We may infer as highly probable that, if the whole genus of humble-bees became extinct or very rare in England, the . . . red clover would become very rare or wholly disappear. The number of humble-bees in any district depends in a great measure on the number of field-mice, which destroy their combs and nests ; and Colonel Newman, who has long attended to the habits of humble-bees, believes that ' more than two-thirds of them are thus destroyed all over England.' Now the number of mice is largely dependent, as everyone knows, on the number of cats ; and Colonel Newman says, ' Near villages and small towns I have found the nests of humble-bees more numerous than elsewhere, which I attribute to the number of cats that destroy the mice.' Hence it is quite credible that the presence of a feline animal in large numbers in a district might determine, through the intervention first of mice and then of bees, the frequency of certain flowers in that district!"

Such facts as these reveal the intimate connection which exists between the farmer's money bag and the habits of insects. Moreover, what is true of the humble-bee and the red clover is equally true of the honey-bee and the white clover. If bee-keeping were abandoned in England, or if disease were to destroy all our stocks, Mark Lane would soon be wondering where its supply of English-grown white clover seed had gone. It is probable that few, if any, districts in the British Islands are adequately stocked with honey-bees; for we must remember that the number of wild bees that would suffice to serve a district under purely natural conditions would prove totally inadequate to the needs of cultivated areas. Mr. W. F. Reid, whose experiments have been quoted above, pertinently remarks that in many fruit-growing districts "capital amounting in the aggregate to many millions of pounds is either unremunerative or only partially remunerative. Instead of being an expense, bees are the most remunerative agricultural investment with which I am acquainted. Under proper management, there are few districts in this country where the sale of the bee products alone will not repay the outlay on bees and hives in two or three years. A careful examination of a fruit district by an expert bee-keeper who has some horticultural experience would, in most cases, reveal whether the district is sufficiently supplied with hive-bees." He also states that the unfruitfulness of pears and plums in the neighbourhood of London and other large towns, which is often attributed to the smoke-laden atmosphere, is really due in the main to the absence of fertilising insects, especially hive-bees. "The trees blossom (he says), and as I have proved by actual experiment, will bear fruit if bees are brought to them while they are in flower."

The life-cycle of humble-bees differs in an important respect from that of the honey-bee, as their colonies persist for one season only, which places these insects at a disadvantage. At the approach of winter, all the members of the community perish, save only the large queens, who, having mated with the drones, secrete themselves in some dry crevice, and hibernate until the following spring, when they sally forth and lay the foundations of new colonies. Thus, humble-bees are never very plentiful until the season is well advanced. But they are exceedingly industrious, the workers issuing from the nests earlier in the morning, and returning home later in the evening, than those of the honey-bee. They are also less susceptible to weather conditions, and may often be seen busily flying from flower to flower on chill and gusty days when all self-respecting honey-bees remain sheltered in the hive. Unfortunately, the amount of honey stored by humble-bees in their nests is so small, even under the most favourable conditions, that these insects could not be domesticated with any hope of profit. Mr. Sladen has shown, however, that it is by no means difficult to induce queens to occupy artificial domiciles in the spring-time ; and it might possibly be worth the agriculturist's while to encourage humble-bees in this manner, especially in districts where these insects are noticeably scarce.

Humble-bees have one bad habit. They—or at least some of the species—are apt to cut holes in the flowers of certain plants (broad-bean, scarlet-runner, *Antirrhinum* and many others), thus gaining access to the nectaries without coming into contact with the stamens and pistil of the bloom (Figs. 13 and 14). The worst offenders appear to be the large black-and-yellow banded humble-bee with a tawny or tawny-white tail (*Bombus terrestris*), and the closely related species in which the tail is pure white (*B. lucorum*). John Curtis, in his *Farm Insects*, emphasizes the destructive powers of these bees, especially in regard to scarlet-runners and broad-beans. He mentions that his attention was first called to the subject in May, 1841, by Mr. Gordon, who was at that time in charge of one of the departments of the Horticultural Garden at Chiswick. The case in question referred to broad-beans, which had been perforated by humble-bees. " The orifice was invariably on the upper side of the calyx and near the centre, or a little more towards the base ; the incision passed through the calyx, as well as the upper lobe of the flower, into the nectary containing the honey, which proved a great detriment to the crop, for the punctured flowers cannot perfect all the beans in the seed-vessel, or the pod proves altogether abortive, and out of clusters of from five to eight flowers only one or two had escaped the injury. On a subsequent visit, I found many pods with a rough brown wound near the base, or they were distorted and deficient in beans, having only two or three at a distance from the puncture. In the same year the horse-beans were in some places attacked to a great extent, and I was amused in the middle of June at witnessing the investigations to which a female humble-bee (*Bombus lucorum*) subjected the flowers, flying from one bean to another, at last alighting with its head over the calyx, just putting its nose to the artificial aperture, and bustling off in a moment to others." Exactly the same spectacle may be witnessed to-day in our gardens and bean fields. With regard to *Bombus terrestris*, Mr. Sladen says that its depredations in New Zealand have " resulted in damage to the seed-vessels of certain flowers, and the seed-growers there would now be glad to have this species supplanted by another." Exactly why humble-bees mutilate flowers in this way is not very easy to decide. Darwin suggested that they do it simply to save trouble. There is some reason for thinking, however, that, owing to the relatively short length of their "tongues," the insects may not be able easily to reach the nectar through the floral tube in the legitimate manner, and that they are thus led to use their mandibles to cut their way to the coveted sweets. Be this as it may, the fact remains that humble-bees are not, as seems to be the case with honey-bees, an unmixed blessing from the agriculturist's point of view. Nevertheless, the benefits which they confer are so material that their occasional delinquencies may very reasonably be pardoned.

VI.—HINTS TO MILK PRODUCERS.

By Thos. Milburn, Ph.D., N.D.A., Secretary of Agriculture to the Lancashire County Council, and Lecturer in Agriculture, Harris Institute, Preston.

Probably there is no section of the farming community which has had more serious cause for reflection (due to Government action, either directly or indirectly) than the ever-important "Milk Producer," and this, coupled with other factors, such as the high price of milk cows and feeding stuffs and keen competition, has rendered his livelihood somewhat precarious. The result has been that many erstwhile milk producers have either failed or have apparently adopted more congenial and lucrative means of utilizing the land.

GOVERNMENT ACTION.

It is too early to speculate to any extent as to what the cumulative effect will be of recent Government action as represented by the Tuberculosis Order and the proposed Milk and Dairies Bill. One thing, however, is certain, milk will cost more to produce, and many farmers will feel inclined to give up the milk business either from fear of loss or from dislike of so many restrictions.

I venture to suggest, however, that those who hang on steadily and produce clean "sound" milk, in conformity with the regulations, will ultimately have their reward. Whilst the supply will, in all probability, be less, the demand will be greater; hence better prices are likely to accrue, and I feel confident that the public will not refuse to pay these increased prices for clean, wholesome produce.

We have now had some years of the working of the "Milk Standard," and while it can hardly be considered perfect, it is difficult to see how it could, advantageously, be altered, having regard to the combined interests of the producer, the middleman, and the public.

If then it is advisable for the "standard" to remain as at present, what can be done to give further protection to the honest producer in order that he may not be laid open to suspicion even when, and if, he wins the case in court.

NIGHT'S *v.* MORNING'S MILK.

There are admittedly many instances where the mixed morning's milk of a herd falls below the "standard" at certain periods of the year, and particularly when the herd is small: for the smaller the herd the greater the daily variation. This latter point is often lost sight of by Inspectors, Magistrates, and others concerned with the administration of the Foods and Drugs Act.

When the interval between "night's" and "morning's" milking is long, the morning's milk will be low in fat-content and the "evening's" milk high, but the farmer found selling poor morning's milk is prosecuted. If, however, the *average composition* of his "night's" and "morning's" milk were taken as representing the quality of milk sold to his customers, there would be fewer prosecutions.

COUNTY DAIRY EXPERT.

Whilst those conducting prosecutions and those who have to adjudicate have difficulties which should not be lost sight of, and with which we are bound to sympathise, they are not always well versed in the various climatic and other conditions influencing the composition of milk, and are admittedly in doubt, at times, as to their decision. In order to assist Local Authorities in such cases I would suggest that, whenever there is an element of doubt, they seek the advice of the Local Dairy Expert, and I venture to think that were this done many cases would not be proceeded with.

Farmers themselves should also consult the expert more than they do at present. Quite recently a farmer of good standing in my own county was summoned for having milk below the standard; no water had been added, no cream taken away, but surely it was not good judgment on his part to give wet brewer's grains to his cows when newly turned out to grass.

The Regulations of the Board of Agriculture regarding prosecutions should be more strictly adhered to by Local Authorities, and more than passing notice should be taken of the Recommendations which accompany these Regulations.

CLEANLINESS.

It is obvious that supervision by the Authorities will be stricter in the future than in the past in order to ensure, so far as is possible, that the public is supplied not merely with genuine milk free from adulteration, but also free from dirt and contamination. Sediment of any kind is objectionable, and we must bear in mind that its "associations" are more so, while they may even be dangerous. With the excellent cotton-wool filters on the market no sediment ought to be present.

But excellent as these filters are they cannot remove the germs which dirt may have introduced, and hence the *producer's ideal* should be to *prevent*, as far as possible, *dirt from entering the milk.* While the producer, middleman, and consumer cannot in any practical way prevent the introduction of some germs into the milk, it is important to bear in mind that these germs may be classified into two groups, viz., (1) those associated with cleanliness, which are beneficial, and (2) those which accompany unclean conditions.

COOLING MILK.

Seeing that all germs cannot be kept out of milk, it is obviously important that the unfavourable ones should, as far as is practicable, be kept in check. In the past this could be done either by adding preservatives, by heating, or by cooling. The first method is now forbidden, whilst the second has certain practical and dietetic objections, but cooling is simple and effective and should be more universally adopted than at present. The craze for warm milk in certain towns prevents its wider adoption.

GROOMING COWS.

Much has been written regarding the cleanliness of cowsheds, utensils, etc., which should undoubtedly be rigorously carried out, but the practice of grooming the cows, one of the first essentials in the production of clean milk, has not received the attention it deserves. We clean horses, why not cows?—simply because it is not the custom. I am strongly of opinion that it is to the producer's advantage to do so, for the milk would be cleaner and the cows healthier, while they would milk and thrive better.

VENTILATION.

If cattle were given greater freedom in the middle of the day during winter they would have an opportunity of grooming themselves, and, with a more liberal supply of fresh air, would be healthier. There is, of course, some danger in such a procedure with newly calved cows and with any animals, if the cowsheds have been badly ventilated. The experiments carried out in Scotland have shown that it is not necessary for the production of a full flow of milk that cowsheds should have every conceivable opening stopped up; that in fact, with free ventilation slightly more milk is produced. Free ventilation will reduce the injurious germs present in the atmosphere within the cowshed, and will result in hardier and healthier stock. It is not air space which is so important but *change of air.*

IMPROVEMENT OF HERDS.

The amount of work got out of a ton of coal depends upon the quality of the coal, the method of stoking, and the efficiency of the machinery which is actuated; similarly the amount of milk produced by a ton of food depends (other conditions being equal) upon the quality of the food, the manner in which it is fed, and the milk-producing capacity of the animals consuming it; hence the necessity of careful breeding and selection.

The milk tests and records carried out in Lancashire and other parts of Great Britain serve to show that there are many indifferent animals in the herds throughout the country; animals giving a yield of milk incompatible with profitable farming. The manner in which dairy herds are managed, in some cases, leads, one to the regrettable conclusion that improvement is likely to be slow, for frequently any kind of a bull is used.

Taking 10 per cent. of the best and 10 per cent. of the worst cows in the herds tested in Lancashire, it was found that the value of the milk from the former was double that from the latter, and an analysis of the Scottish Milk Records gives approximately the same result. It is important then that poor milkers should be gradually weeded out, and this weeding, coupled with the use of a bull from a milking strain, will undoubtedly bring about an improvement, providing due regard is paid to constitution.

It cannot be too often repeated that *individuality is a potent factor in milk production, for no amount of feeding will turn a poor milker into a good one.*

FEEDING.

It is impossible to treat such a wide subject as the above satisfactorily in the present article, but a few hints may not be out of place. Taking the country as a whole, the majority of milk cows are well fed; at the same time, however, herds may be found which, owing to improper nutrition, are not giving their best. Abundance of food is of little use if it is of an innutritious, indigestible type. It must be borne in mind that the giving of milk makes a great drain on the system of the animal, particularly on the nitrogenous material, and unless this is supplied liberally in the food the animal is likely to suffer. Those farmers who have poor bulky material to deal with should bear this in mind and feed liberally with cakes or meals rich in albuminoids or protein compounds (lean-meat-forming material) in order to balance the ration.

It is possible, of course, to over-feed, and the investigations carried out in Kent and Yorkshire show that quite a number of herds in the two counties are overfed, and no doubt the same holds good in the western portion of England.

A frequent source of over-feeding is the giving of cake to animals during the flush of grass. Grass from reasonably good pastures is a perfect food for milk production, containing all the substances necessary for animal nutrition and milk formation in the proper proportion, and hence an addition of cake is in many cases unnecessary. Not that cake-feeding should be discouraged, but only used with discretion. On poor grass land, and even on better land, as summer advances—say from the middle of July onwards—a little cake may be given with satisfactory results.

I would suggest to farmers and milk producers generally, that, as grass is such an excellent food, and feeding stuffs are dear, it would be profitable to improve the grass land by a judicious use of artificial manures, thereby reducing the cake bill. An experiment carried out at the Midland Agricultural College is particularly interesting and useful in this respect. Two portions of a field were taken (A and B, each four acres in area), and the one portion (B) was dressed with 4 cwt. of Superphosphate and 1½ cwt. of Sulphate of Potash,. at a cost of about 29s. per statute acre, while the other portion (A) was left untreated. The milk from the cows on each portion was carefully weighed, and in four years the manured portion (B) produced 386 gallons more milk per acre than (A). In other words, 386 gallons extra milk were produced for 29s. (the cost of the manure), or at a cost of less than one penny per gallon.

It is quite impossible to produce extra milk at anything approaching such a figure by cake-feeding, while the effect of the one dressing of manure is by no means as yet exhausted. All dairy farmers should consider seriously the desirability of economising in feeding stuffs by the improvement of pastures. It should be remembered, however, that Superphosphate and Sulphate of Potash may not be the most satisfactory manures to use in every case.

Perhaps I could not treat this question of feeding better or more concisely than by giving a few don'ts :—

(1) Don't use a food merely because it is in fashion, for the price may be higher than its contents justify.

(2) Don't buy mouldy and damaged cakes or meals because they are offered at a low price, for they are likely to be dear in the end.

(3) Don't forget that patent foods are usually sold at a high price in proportion to the feeding material contained in them, and further, that there is an element of doubt regarding their digestibility and manurial value.

(4) Don't forget the great importance of "balance" in the ration, i.e., the proportion of nitrogenous to non-nitrogenous material.

(6) Don't be too liberal with cake during the flush of grass in early summer, for it is doubtful if it pays.

(7) Don't forget that a mixture of meals usually gives more economical results than any single meal, and is less likely to taint the milk.

(8) Don't feed cotton cake to very young animals, nor to milk cows near the time of calving.

(9) Don't forget that salt forms a valuable addition to the ration for farm stock; it enhances its palatability, and in other ways acts beneficially.

(10) Don't forget that palatability, though adding nothing material to the food, is of importance.

In conclusion I would earnestly urge one and all to "breed," "weed" and "feed," and to co-operate loyally with each other and with the authorities in producing good wholesome milk. I sincerely believe that as this is likely to secure a fair return for the outlay of money and pains, the present worries and difficulties will be overcome and that increased prices will compensate for the extra cost and precautions necessary for proper milk production.

VII.—THE BREEDING OF CROSS-BRED CATTLE.

By W. Nixon, Agricultural Live Stock Adviser to the University of Bristol.

Although the demand for pure-bred stock both at " home " and for " export " is brisk and promises to continue, it may still be worth while to give consideration to some of the principles affecting the breeding of cross-bred cattle. Briefly stated, the following may be regarded as good reasons for cross-breeding, viz. :—

(1) That the situation and natural capabilities of farms in certain districts are best adapted for the breeding and rearing of this class of stock.

(2) That the general demand for the particular cross justifies its production.

(3) That crosses are well adapted for specific purposes, notably for exhibition in our Christmas showyards and sales.

When we speak of " crossing " cattle it must not be inferred that success will be achieved if the mating is done indiscriminately or in a haphazard fashion. Success in the breeding and rearing of first-rate " cross " cattle requires almost as much judgment and foresight and as keen an appreciation of the underlying principles as in the case of pure-bred stock, although a mistake in the former has not the same permanent effect as in the latter, and can be remedied the succeeding season.

The parent stock must be carefully selected. Personally I have always found that a blend of pure blood, preferably on both sides, has given the best economic result and is the least likely to lead to disappointment or failure. The first cross is invariably the best.

Undoubtedly one of the most popular and fashionable crosses is the " blue-grey." As this " Journal " is circulated more especially in the western and southern counties, a brief *résumé* of the breeding and management of this deservedly highly-prized animal may not be out of place.

MATING OF WHITE SHORTHORN BULL WITH PURE GALLOWAY COW.

The stamp of Shorthorn bull favoured by breeders possesses a rather fine horn, short broad head, abundance of fine hair, wealth of flesh and ribs nicely sprung. Moreover he must show growth with a level top and underline. Preference is always given to a bull bred on " white lines ;" *i.e.*, one or both of his parents or some of his ancestors have been white.

With this characteristic there is greater certainty of the progeny possessing that much desired mixture and blend in colour to which we have referred.

The Galloway is polled, and, although black predominates, occasionally dun and sheeted (or white-middled) are met with. They are compact in shape, active, very hardy, thrifty, and covered with long glossy hair. They are well adapted for high lying farms in bleak exposed districts. The Galloway is very prepotent, and nearly all the offspring of this cross are polled.

The majority of the calves suck their dams. There are regular autumn sales for these "sucklers" in certain districts—the prices ranging from £7 to £16 at six to ten months old.

The "Borderland" is the great breeding centre of this particular cross. The cattle are mainly bred at high altitudes and on poor pasturage, the land being rented at from 20s. down to as low as 2s. 6d. per acre. Of course, Carlisle is the sale-ring *par excellence* for this particular class of blue-grey. Thousands of all ages are sold at the autumn and spring sales. This autumn (1913) blue-grey store cattle have been realising in the above-named market from 40s. to 51s. per live cwt. It is evident that the last-mentioned price is for animals of exceptional merit and intended for Christmas exhibition purposes.

MATING OF WHITE SHORTHORN BULL WITH PURE ABERDEEN-ANGUS COW.

This cross is on parallel lines with the Shorthorn-Galloway cross. The Angus cow is larger than the Galloway, but lacks the abundance of hair, and is therefore not so well suited to stand exposure. In the management of the offspring there is much in common.

These cattle are exposed for sale at the principal markets in Scotland, and in September, 1913, at Inverness, one of the principal markets, cross-bred calves, nine months old, made up to £16, and two-years old store cattle made up to £22.

GENERAL OBSERVATIONS.

There are other crosses besides those mentioned suitable for supplying beef or milk, whilst, of course, the method of mating described above may be reversed, namely, polled bulls on Shorthorn cows, and the ring of change may be continued with the various crosses.

It is a notable fact that the North supplies a large proportion of the prize-winners at the fat stock shows. This has stimulated enterprise in breeding and the bestowal of care and skill upon the management of the calves. It has become a leading ambition with the small as well as the large farmers to produce animals that will distinguish themselves at representative exhibitions, and many of my readers would be surprised if they knew the unpretentious circumstances under which some of the winners have been bred and reared.

It is always gratifying at these sales of "crosses" to note the prominent consideration given to the stock exposed by the "Crofter" (small farmer), the keen competition to secure it, and the high position it occupies on the tabulated list of sale prices.

Christmas fat shows and exhibitions are the battlefields of the partisans of each breed and cross. It is well that there is this rivalry, for these demonstrations show the high standard attainable by individual animals when bred on right lines.

Sometimes, owing to the signal success of a particular cross, theoretical advisers would induce the breeder to discard the type of animal which has been his mainstay in the past. The breeder, however, is usually endowed with sufficient restraint and discrimination to resist being carried away by what may prove to be only a temporary triumph. At the same time, the majority of breeders are always ready to eliminate sentiment and modify their system when it is evident that other lines of breeding are in the ascendancy.

It has been said that the South Devon cattle were primarily a cross between the Devon (North) and the Guernsey. The Dexter mated with the Aberdeen-Angus or Hereford has contributed an important part to the small cross-breds at our great fat stock shows. In some districts there is a steadily increasing demand for the Hereford bull for mating with cross grades. It is generally acknowledged that the Hereford sire has a remarkable power in stamping the sterling qualities of the breed on the progeny.

VIII.—THE SOCIETY'S EXHIBITION AT TRURO.

By Thos. F. Plowman, Secretary and Editor.

The Society's 1913 Exhibition at Truro was opened on Tuesday, May 27, and closed on Saturday, May 31.

A plan showing the situation and arrangement of the Yard faces this page.

ENTRIES.

The following is a comparative statement of the entries in the Stock and Produce Classes in 1861, 1868, and 1913 :—

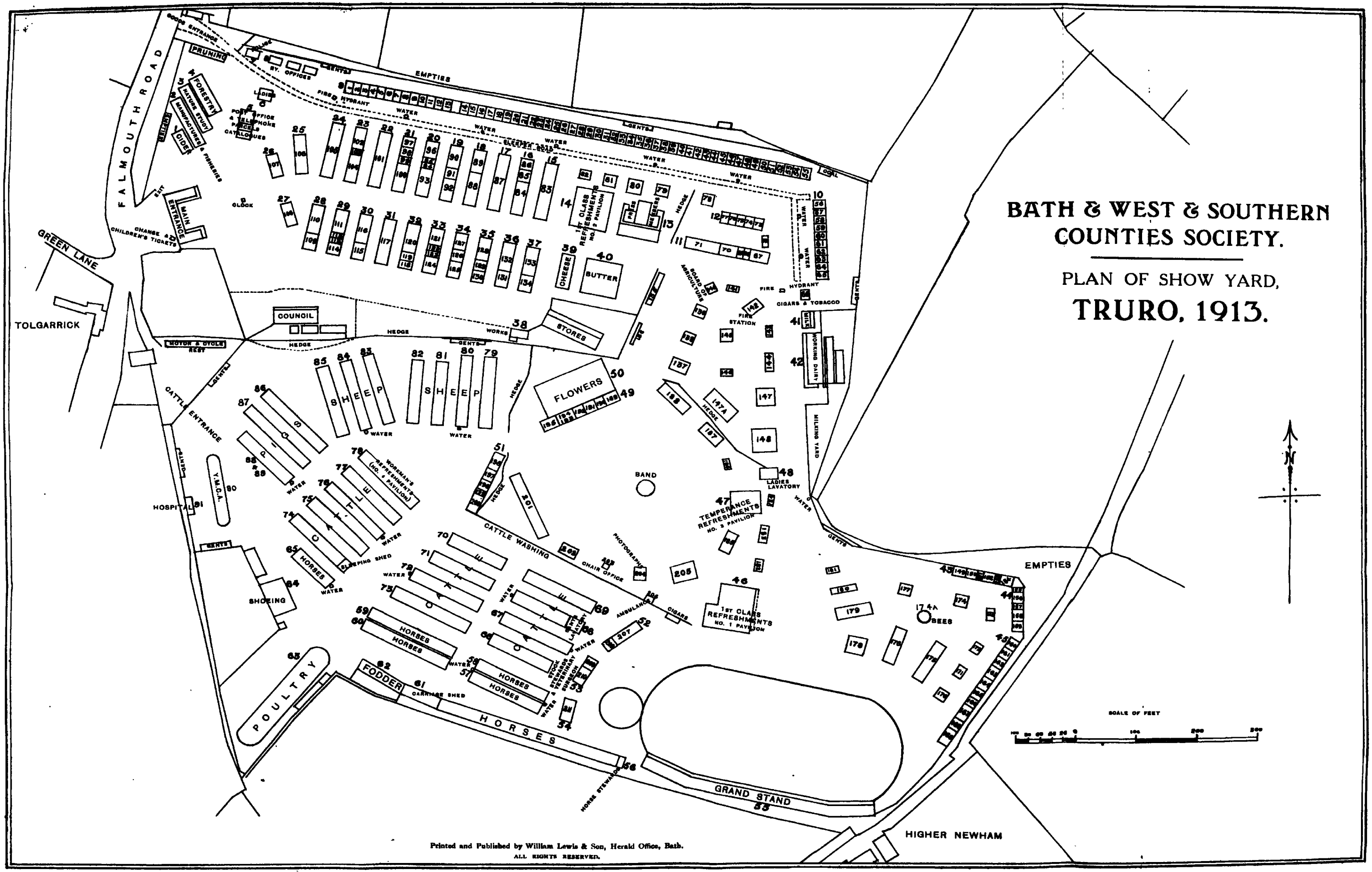
	Truro, 1861.		Falmouth, 1868.		Truro, 1913.	
HORSES :—						
Agricultural	24		8		39	
Hunters, Hacks, Ponies, Harness and Jumping	65		28		209	
	—	89	—	36	—	248
CATTLE :—						
Devons	46		49		36	
South Devons	0		0		42	
Shorthorns	39		24		56	
Herefords	26		6		36	
Sussex	0		0		6	
Aberdeen-Angus	0		0		15	
Jersey	0		0		101	
Guernsey	0		0		82	
Kerry and Dexter	0		0		26	
Dairy	0		0		31	
	—	111	—	79	—	431
SHEEP		152		141		213
PIGS		33		36		122
POULTRY		254		211		501
PIGEONS		58		74		0
FARM PRODUCE :—						
Cheese	0		0		31	
Cream Cheese, Butter and Cream ..	0		0		175	
Cider	0		0		51	
	—	0	—	0	—	257
		697		577		1,772

A list of the awards, names of the Judges, etc., will be found on pages *i* to *lxxxv* of the Appendix to this volume.

BATH & WEST & SOUTHERN COUNTIES SOCIETY.

PLAN OF SHOW YARD,

TRURO, 1913.



Printed and Published by William Lewis & Son, Herald Office, Bath.

ALL RIGHTS RESERVED.

PRIZES

The money prizes in 1913 were contributed as follows :—

	£	s.	d.
Bath and West and Southern Counties Society	2,791	15	0
Cornwall Local Committee	35	0	0
Royal Cornwall Agricultural Association	115	0	0
Cornwall County Council	31	7	6
Shire Horse Society (or Medal)	15	0	0
The President (Viscount Falmouth)	25	0	0
Viscount Tredegar	12	0	0
E. Hain, Esq.	3	0	0
G. H. Johnstone. Esq.	5	0	0
Devon Cattle Breeders' Society	10	0	0
South Devon Herd Book Society	17	0	0
Shorthorn Society	30	0	0
Dairy Shorthorn (Coates's Herd Book) Association	10	0	0
Hereford Herd Book Society	20	0	0
English Aberdeen-Angus Cattle Association	10	0	0
English Jersey Cattle Society (or Medal)	20	0	0
English Guernsey Cattle Society	28	0	0
English Kerry and Dexter Cattle Society	15	0	0
Devon Longwoolled Sheep Breeders' Society	10	0	0
South Devon Flock Book Association	20	0	0
Kent or Romney Marsh Sheep Breeders' Association	17	0	0
Southdown Sheep Society	17	0	0
Hampshire Down Sheep Breeders' Association	10	0	0
Oxford Down Sheep Breeders' Association	10	0	0
Dorset Horn Sheep Breeders' Association	15	0	0
Dorset Down Sheep Breeders' Association	15	0	0
Exmoor Horn Sheep Breeders' Society	10	0	0
British Berkshire Society	5	0	0
Large Black Pig Society	12	0	0
Hon. J. R. de C. Boscawen	3	2	0
Hon. T. C, Agar Robartes, M.P.	1	0	0
Sir G. Croydon Marks, M.P.	1	0	0
General Sir R. Pole Carew, M.P.	1	0	0
	£3,340	4	6

Gold, Silver and Bronze Medals were also given by the Society, and Medals or Plate by H.R.H. The Prince of Wales, K.G., the Proprietors of the "West Briton and Cornwall Advertiser," the Shire Horse Society, the Hunters' Improvement and National Light Horse Breeding Society, the Hackney Horse Society, the Polo and Riding Pony Society, Chas. A. Hanson, Esq., the Sussex Herd Book Society, the Aberdeen Angus Cattle Society, the English Aberdeen Angus Cattle Association, the English Jersey Cattle Society, B. de Bertodano, Esq., the English Kerry and Dexter Cattle Society, the Southdown Sheep Society, Messrs. Chas. and Thos. Harris & Co. (Ltd.), and the Poultry Club.

IMPLEMENTS.

The following is a comparative statement of the number of feet run of shedding provided for Implements, Machinery, etc., and of the number of square feet of open space occupied by exhibits unsuitable for Shedding :—

		Truro, 1861.	Falmouth, 1868.	Truro, 1913.
Machinery in Motion ..	. feet run	240	280	980
Agricultural and General Implements	.. „	1,750	2,735	1,950
Seeds, Cattle Foods, Artificial Manures, &c.	.. „	7	180	947
		1,997	3,195	3,877
Open space for Farm and Horticultural Buildings, &c. ..	..square feet	2,097	900	25,519
		4,094	4,095	29,396

MISCELLANEOUS DEPARTMENTS.

Nature Study, Handicrafts and Forestry exhibitions (particulars of which are given on pages 106 to 112), were again noteworthy features of the Show, and excited much interest.

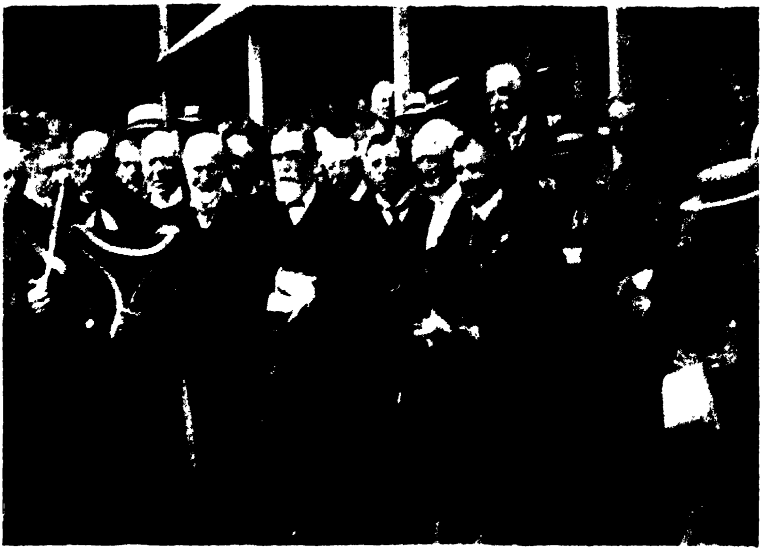
Near the Forestry Gallery demonstrations of Tree Pruning and Grafting were given each morning by Mr. J. Ettle, F.R.H.S.

A fully equipped Working Dairy, in which the Buttermaking Competitions were held, formed, as usual, a prominent feature of the Show. Here various dairy implements and appliances, including power and hand separators, were shown at work, and the best methods of making butter and clotted cream were practically demonstrated.

There were also Shoeing and Milking Competitions, the following being a comparative statement of the entries :—

	Truro, 1861	Falmouth, 1868.	Truro, 1913
Butter-Making	0	0	388
Shoeing (no record in 1861 and 1868) ..	..	..	42
Milking	0	0	59
	0	0	489

The Show was inaugurated by the Mayor of Truro (Mr. W. G. Goodfellow), who attended in state, accompanied by the members



'hoto by. [*C. Argalls, Truro.*

THE MAYOR OF TRURO INAUGURATING THE SHOW.

Photo by] [*C. Argalls, Truro.*

GROUP OF CORNISH MAYORS
AT THE INAUGURATION OF THE TRURO SHOW.

Photo by [*C. Argalls, Truro.*

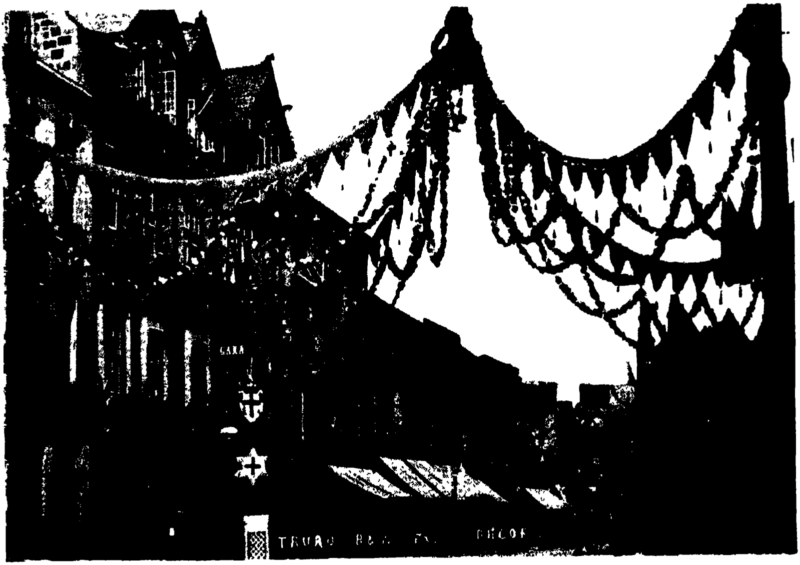


Photo by] [*C. Argalls, Truro.*

STREET DECORATIONS AT TRURO.

of his Corporation, and the Mayors of Penzance, St. Ives, Falmouth, Penryn, Helston, Bodmin, Lostwithiel, Liskeard and Launceston, together with representatives of the Local Committee for the Show and of the Royal Cornwall Agricultural Association. They were received by the President (Viscount Falmouth) and the members of the Council of the Society.

The Mayor offered congratulations to the Society on having a distinguished Cornishman, in the person of Lord Falmouth, as President for the year, and said that Cornish people generally were delighted when it was known that his lordship had accepted the position. From the time that it was decided to hold the Show at Truro, all parts of the County had loyally supported the City, by subscriptions and otherwise, in its endeavour to give the Society a hearty welcome, and they were all glad that the President and so many members of the Royal Cornwall Agricultural Association and the Mayors representing their respective Boroughs were with them that day to demonstrate the County's keen sense of satisfaction at the Society's visit. He was but voicing the widely expressed hope that such a long period would not intervene before the Duchy was again visited, and on behalf of " One and All " in the westernmost county he wished the Show unqualified success. Cheers having been given for the King, the Duke of Cornwall, the Mayor and Mayoress, and the President, the proceedings, which were particularly gratifying to all concerned as showing the cordial relations existing between the Society and the County, then terminated.

Musical performances were given on the first three days of the Show by the Band of the Coldstream Guards, and by the Royal Garrison Artillery Band (Plymouth) on the two last days, and attracted large audiences,

Reference must again be made to the kindly thought of the Young Men's Christian Association, who, having had space in the Show Yard placed at their disposal by the Stewards, provided a reading and writing tent for the special use of those engaged in looking after the stock, etc., in the Yard. Here the Association gave in the evening little entertainments and addresses, which, together with the other advantages provided, were thoroughly appreciated by those for whom they were intended.

ATTENDANCE.

The first of the following tabular statements refers to the number of persons who paid for admission to the Showyard, and the second to the admission receipts. The attendance was extremely satisfactory, far exceeding expectations, and there is no doubt that it would have been much larger on the last day of the Show but for the unfortunate gale which prevailed on the previous day. The effect of this was to be seen in many parts of the Yard, and the fact that the Horticultural Section had to be entirely closed as a consequence no doubt acted as a deterrent to many who would otherwise have visited the Show.

Admissions.	Cardiff, 1911.	Bath, 1912.	Truro, 1913.
At 7*s.* 6*d.* (Season Tickets)	161	129	*1,520
„ 2*s.* 6*d.*	15,285	12,572	10,609
„ 1*s.*	38,413	37,374	40,851
Children, &c.	2,942	4,703	4,638
	56,801	54,778	57,618

Receipts.	Cardiff, 1911.			Bath, 1912.			Truro, 1913.		
	£	s.	d.	£	s.	d.	£	s.	d.
Show Yard	3,965	4	0	3,601	3	6	3,857	10	6
Horse Ring Stand	417	4	0	333	19	0	553	12	6
Working Dairy	8	10	6	4	17	9	12	12	3
	4,390	19	0	3,940	0	3	4,423	15	3

* The price of the Season Tickets was reduced from 7/6 to 5/- at Truro, as there were only two half-crown days, whereas at Bath and Cardiff there were three.

The Society's Finance Committee, in their report to Council upon the financial result of the Show, pointed out that, although the gate receipts at the Truro Show far exceeded expectations, the building of the Show Yard was unusually expensive, owing, among other reasons, to the hilly nature of the ground necessitating extra labour and timber, and to the long spell of wet weather during the progress of the work, which so hindered the building that additional hands had to be engaged at a later stage. It had also to be recognised that of late years there had been a considerable rise in the cost both of timber and labour, so that the building of the Show Yard was a much more expensive matter now than formerly. Under all the circumstances, the Committee considered that it was a subject of congratulation that the Show could be held at one of the extreme boundaries of the Society's ordinary sphere of operations without incurring a loss, there being a small profit on the Show. This was mainly due to the enthusiastic support accorded by the whole of Cornwall and to the kindly feeling shown towards the Society by the Royal Cornwall Agricultural Association.

THE STREET DECORATIONS.

Any report of the Society's visit to Truro would be incomplete without some reference to the unusually lavish and beautiful decoration of the streets and houses of the City, which very happily served to emphasise the goodwill of the inhabitants towards the Society. The kindly feeling of City and County alike found expression in many ways, and the heartiness of the Cornish welcome will be long and pleasantly remembered by all who participated in it.

IX.—THE MILK-TEST CLASSES AT TRURO.

By Dr. J. A. Voelcker, M.A., F.I.C., Consulting Chemist to the Society.

The competition in the Milk-Test Classes at the Truro Show was but a limited one, there being only 14 entries, and, as one of these was withdrawn, only 13 cows, or three less than at Bath in 1912, actually came for trial.

In the light-weight class (under 900lbs. live-weight) there were three competing cows, all Jerseys. The heavy-weight class (900lbs. live-weight and over), included the remaining 10 cows, two being Lincoln-Red Shorthorns, three Guernseys, four Jerseys, and one a cross-bred.

The animals were milked dry on the evening of Wednesday, May 28, and the morning (6 a.m.) and evening (6 p.m.) milkings of the following day (Thursday, May 29), were taken for the purposes of the test.

In the light-weight class, all three animals gave milk up to the standard required (3 per cent. fat and 12 per cent. total solids at each time of milking), and the First Prize was, with the help of lactation points, won by Mr. J. H. Smith-Barry's "New Year's Gift" the same owner's "Marionette" gaining the third award. The two cows were separated in the prize list by Mr. J. Brutton's "Irish Lass," the cow which had won the First Prize in this class at the Bath Show the year previous, with a rather better return than now.

In the heavy-weight class there was only one failure to come up to the required standard, this being a Lincoln-Red Shorthorn

MILK-TEST CLASSES.

No. in Catalogue.	Owner and Cow.	Breed.	Age.	No. of Days in Milk.	Quantity of Milk.					
					Morning.		Evening.		Total.	
	CLASS 113. Cows under 900 lbs. live weight.		Years		lbs.	oz.	lbs.	oz.	lbs.	oz.
498	Mr. J. H, Smith-Barry's "New Year's Gift"	Jersey	6½	134	22	4	23	12	46	0
311	Mr. J. Brutton's "Irish Lass"	"	8¾	72	24	4	23	2	47	6
305	Mr. J. H. Smith-Barry's "Marionette" ..	"	8½	103	20	12	21	2	41	14
	CLASS 114. Cows 900 lbs. live weight or over.									
494	Mrs. Bainbridge's "Cherry"	Guernsey	9	76	27	12	27	2	54	14
495	Mr. J. Evens' "Burton Bella"	Lincoln Red	4	171	21	4	21	10	42	14
322	Lord Rothschild's "Triangle 2nd" ..	Jersey	7½	127	21	4	23	4	44	8
389	Canon Raffles Flint's "Ladock Princess"	Guernsey	6½	19	24	4	26	4	50	8
499	Mr. J. H. Smith-Barry's "Caprice" ..	Jersey	8	117	19	0	21	0	40	0
392	Mr. A. W. Bailey Hawkins' "Winter Green 5th"	Guernsey	6½	183	16	14	18	12	35	10
309	Lady Wernher's "Carlsbad"	Jersey	5½	108	19	0	19	4	38	4
500	Mr. J. Williams' "Mignonette"	Cross	6	57	19	14	19	6	39	4
298	Mr. J. Brutton's "Yeovil Lively" ..	Jersey	4¼	61	17	8	18	4	35	12
496	Mr. J. Evens' (un-named)	Lincoln Red	9	18	23	0	26	12	49	12

MILK-TEST CLASSES.

Quality of Milk.				No. of Points for Milk.	No. of Points for Lactation.	Total No. of Points.	Awards.
Morning.		Evening.					
Fat.	Solids.	Fat.	Solids.				
per cent.	per cent.	per cent.	per cent.				
3.30	12.56	4.25	13.66	46.00	9.40	55.40	First Prize.
3.60	12.55	5.60	14.90	47.37	3.20	50.57	Second Prize.
4.60	14.17	4.60	14.08	41.87	6.30	48.17	Third Prize.
3.50	12.27	5.00	13.90	54.87	3.60	58.47	First Prize.
3.30	12.06	3.50	12.41	42.87	12.00	54.87	Second Prize.
4.40	13.88	4.80	14.16	44.50	8.70	53.20	Third Prize.
3.20	12.18	4.95	13.92	50.50	nil	50.50	
3.90	13.19	4.40	13.68	40.00	7.70	47.70	
4.70	14.53	3.70	12.88	35.62	12.00	47.62	
4.45	13.50	5.35	14.51	38.25	6.80	45.05	
4.55	14.04	5.00	13.90	39.25	1.70	40.95	
3.90	13.01	4.90	14.06	35.75	2.10	37.85	
3.10	11.88	3.00	11.97	49.75	nil	49.75	Deficient in total solids.

(un-named), which, without giving at all an exceptional yield, showed milk deficient in total solids on each occasion, though just meeting the requirements as regards fat.

The highest yield was given by the First Prize winner, Mrs. Bainbridge's Guernsey cow "Cherry." Mr. J. Evens, as at Bath in 1912, occupied second place with his Lincoln-Red Shorthorn, "Burton Bella." The milk yield of this cow was, as will be seen on reference to the table, considerably below that of the First Prize winner, but the points were much helped by lactation allowance, the cow thus beating narrowly Lord Rothschild's Jersey cow, "Triangle 2nd," which in 1911 had occupied a similar position at the Norwich Show of the R.A.S.E.

Among the cows which now competed without success was a noted winner, Mr. J. H. Smith-Barry's "Caprice" (Jersey), which had gained the first award at the Liverpool Show of the R.A.S.E. in 1910, and in the following year had won the second place at the Norwich Show (R.A.S.E.)., and the first prize at the Cardiff show (B. & W. S.). Another previous winner now unplaced was Mr. Smith-Barry's "Mignonette" (Jersey), third in the light-weight class at Bath in 1912.

Analyses and other particulars are given in the appended table.

X.—THE BUTTER-TEST CLASSES AT TRURO.

By A. F. Somerville, Judge.

The testing of cows entered for the medals offered by the English Jersey Cattle Society was carried out at Truro on May 29th and 30th. There were ten entries, but two animals were withdrawn, leaving eight only to compete.

The cows were milked out on May 28th, first cows at 6 p.m., second cows 6.30 p.m., and were milked for the test on May 29th at 6 and 6.30 a.m. and 6 and 6.30 p.m. The milk was separated after each milking, and the cream churned the following morning. Churning was commenced at 7.3 a.m., and finished at 8.20 a.m. All creams were churned at 52°, and the butter dried by the Delaitense before being made up; temperature of dairy, 58°. The weather was extremely hot on the 26th and 27th, but became much cooler in the evenings of the 28th and 29th, and became cool on the 30th. The sudden change of temperature certainly affected the animals, but, with one exception, they gave more milk in the evening than in the morning. The separated milks were carefully examined and

JERSEY BUTTER TEST.

No. in Catalogue.	Exhibitor.	Name of Cow.	Date of Birth.	Date of Last Calf	No. of Days in Milk.	Milk Yield. Total.	Butter Yield.	Ratio, viz., lb. Milk to lb. Butter.	No of Points for Butter.	No of Points for Lactation.	Total Number of Points.	Awards.
						lb. oz.	lb. oz.					
298	J. Brutton ..	Yeovil Lively	Mar. 9, 1909	Mar. 29, 1913	61	35 12	1 11	21.18	27.00	2.10	29.10	
305	J. H. Smith-Barry	Marionette	Oct. 3, 1904	Feb. 15, 1913	103	41 14	2 0½	20.61	32.50	6.30	38.80	Silver Medal.
306	J. H. Smith-Barry	Flower Girl	June 28, 1906	Feb. 6, 1913	112	37 12	1 9½	23.68	25.50	7.20	32.70	
309	Lady Wernher ..	Carlsbad (22nd-267)	Dec. 4, 1907	Feb. 10, 1913	108	38 4	1 14	20.40	30.00	6.80	36.80	Certificate of Merit.
311	J. Brutton ..	Irish Lass	Aug 12, 1904	Mar. 18, 1913	72	47 6	2 3¼	21.50	35.25	3.20	38.45	Bronze Medal
322	Lord Rothschild ..	Triangle 2nd.. ..	Dec. 13, 1905	Jan. 22, 1913	127	44 8	2 0¼	22.07	32.25	8.70	40.95	Gold Medal.
498	J. H. Smith-Barry	New Year's Gift ..	Jan. 1, 1907	Jan. 15, 1913	134	46 0	1 11¾	26.52	27.75	9.40	37.15	Certificate of Merit.
499	J. H. Smith-Barry	Caprice	July 28, 1905	Feb. 1, 1913	117	40 0	1 8¼	26.39	24.25	7.70	31.95	

GUERNSEY BUTTER TEST.

No. in Catalogue.	Exhibitor.	Name of Cow.	Date of Birth.	Date of Last Calf	No. of Days in Milk.	Milk Yield. Total.	Butter Yield.	Ratio, viz., lb. Milk to lb. Butter.	No of Points for Butter.	No of Points for Lactation.	Total Number of Points.	Awards.
399	Canon S. R. Raffles Flint	Ladock Princess ..	Jan. 9, 1907	May 10, 1913	19	50 8	1 11½	29.38	27.50	nil	27.50	
392	A W. Bailey Hawkins	Winter Green 5th ..	Jan. 3, 1909	Nov. 27, 1913	182	35 10	1 8½	23.26	24.50	12.00	36.50	1st Prize, £5.
394	W. Penrose ..	Fanny du Foulon 20th	Jan. 8, 1907	Mar. 21, 1913	69	40 8	1 12	22.73	28.00	2.90	30.90	
396	Col. E. St. Aubyn	Golden Horn of Glyn 2nd	Apl. 5, 1908	Apl. 9, 1914	50	37 10	1 7	26.17	23 00	1.00	24.00	
399	Viscount Valletort	Cotchele Saucy ..	Dec. 1, 1904	Mar. 31, 1913	59	28 0	1 12	16.00	28.00	1.90	29.90	
402	Col. E. St. Aubyn	Golden Horn of Glyn 4th	May 5, 1910	Apl. 20, 1913	39	41 14	1 15¾	21.10	31.75	nil	31.75	2nd Prize, £3.

skimmed when any cream was shown, and the butter-milk on the 31st disclosed nothing that was churnable.

There was also a Butter Test Competition for cows entered in the Guernsey Classes for which prizes were offered by the English Guernsey Cattle Society. Six cows competed, and the results are given in the appended table.

I was indebted for the valuable assistance given me by Mr. Hammond, Mr. W. H. Clark, the assistant steward, and Mrs. Luke, who superintended the churning and making up of the butter.

XI.—THE EXHIBITION OF CIDER AT TRURO.

By E. W. Farwell, Steward.

The entries of cider at the Truro Exhibition in 1913 numbered 51, as against 53 at Bath in 1912, the classification being the same in each case. In deference to the wish of exhibitors, the Council resolved that this year; and for the future, they would give money prizes or medals and certificates, at the option of the prize-winners.

Samples from each exhibit were submitted to Mr. F. J. Lloyd, F.C.S., for analysis, and particulars of these analyses are set out in Appendix "A." It is pleasant to have to record that only one entry had to be disqualified, and that was for exceeding the maximum specific gravity of 1·015 in the class for bottled dry cider.

Mr. J. H. Hill, of Newtake, Staverton, Totnes, was the Judge appointed by the Society, and he fulfilled his duties on the first day of the Show.

Some of the entries for cider in cask with specific gravity not exceeding 1·015, were rather wanting in condition, and the first prize winner had an easy victory; but in the class for bottled cider of the same specific gravity, the condition of the cider was much better and the competition closer, especially between the first three.

Many of the exhibits in the open class for cask cider were of only moderate quality and condition; but the open class for bottles was one of the best in the Show, the exhibits being of a high order, with but one or two exceptions.

In the class for old cider the competition was keener than in any of the other classes, and the winners of the first three prizes were placed by the Judge in their relative positions only after much hesitation.

Although, on the whole, the exhibits were not quite up to the average merit of former years, they were generally of far better quality than might have been expected considering how unfavourable was the summer of 1912 for the ripening of fruit.

APPENDIX "A."

Class	No.	Name of Exhibitor.	Specific Gravity At 60°F.	Alcohol by Volume.	Acid malic.	Solids per cent.	Awards.
175	1	Co. Armagh Cider Co.	1.013	4.85	.48	4.70	
	2	Davis H. J.	1.015	5.30	.56	5.39	1st Prize.
	3	Haydon C.	1.014	4.25	.62	4.71	
	4	Pullin Bros. ..	1.015	5.25	.52	5.39	2nd Prize.
	5	Quantock Vale Cider Co.	1.011	6.13	.56	4.81	
	6	Skyrme J. H. ..	1.012	4.70	.60	4 56	R.
	7	Tilley W. T. S. ..	1.010	6.01	.50	4.44	3rd Prize.
176	8	Co Armagh Cider Co.	1.008	3.80	.56	2.84	
	9	Davis H J. ..	1.015	5.40	.51	5.29	1st Prize.
	10	Pullin Bros. ..	1.016	5.00	.46	5.53	Disq.
	11	Quantock Vale Cider Co	1.012	5.80	.65	4 92	
	12	Ditto	1.011	6.20	.59	4 59	3rd Prize.
	13	Tilley W. T. S. ..	1.002	5.90	.55	2.21	
	14	Ditto	1.007	5.95	.40	3.48	H.C.
	15	Vickery Bros. ..	1.015	4.45	.53	5.28	2nd Prize.
177	16	Bainbridge Mrs. R. C.	1.014	4.80	.67	5.03	
	17	Co. Armagh Cider Co.	1.023	4.10	.48	7.09	C.
	18	Davis H. J. ..	1.024	4.10	.40	7.51	2nd Prize.
	19	Evans F. H. & Son	1.024	3.00	.62	7.03	
	20	Haydon C.	1.022	2.85	.44	6.39	
	21	Pullin Bros. ..	1.023	3.95	.42	7.04	R.
	22	Skyrme J. H. ..	1.019	4.45	.50	6.12	
	23	Stone T.	1.031	4.70	.65	9.38	H.C.
	24	Ditto	1.033	3.30	.67	9.49	
	25	Tilley W. T. S. ..	1.017	4.70	.37	6.05	3rd Prize.
	26	Ditto	1.022	5.40	.44	7.59	1st Prize.
178	27	Amory Sir J. H., Bart	1.022	3.75	.64	6.87	
	28	Absent					
	29	Co. Armagh Cider Co.	1.028	3.20	.45	8.29	
	30	Davis H. J. ..	1.021	4.45	.44	6.70	C.
	31	Ditto	1.024	4.15	.36	7.44	H.C.
	32	Ditto	1.028	3.70	.39	8.37	2nd Prize.
	33	Evans F. H. & Son	1.027	2.40	.64	7.45	
	34	Haydon C.	1.023	3.10	.41	6.73	
	35	Pullin Bros. ..	1.032	2.40	.53	8.83	
	36	Skyrme J. H. ..	1.022	4.70	.73	7.03	
	37	Stone T.	1.032	3.30	.55	9.34	V.H.C.
	38	Ditto	1.032	4.50	.61	9.51	H.C.
	39	Tilley W. T. S. ..	1.029	2.85	.36	8.29	R.
	40	Ditto	1.027	3.95	.47	8.02	3rd Prize.
	41	Ditto	1.028	3.60	.37	8.35	1st Prize.
	42	Vickery Bros. ..	1.031	2.85	.45	8.68	
179	43	Co. Armagh Cider Co.	1.027	4.60	.48	8.40	C.
	44	Davis H. J. ..	1.029	4.75	.44	8.99	2nd Prize.
	45	Ditto	1.029	4.65	.29	8.99	1st Prize.
	46	Skyrme J. H. ..	1.030	3.60	.40	8.85	C.
	47	Stone T.	1.024	5.05	.34	7.63	C.
	48	Ditto	1.030	4 40	.36	9.11	3rd Prize.
	49	Tilley W. T. S. ..	1.019	6.45	.50	6.81	C.
	50	Ditto	1.021	4.50	.38	6.90	H.C.
	51	Vickery Bros. ..	1.031	5.25	.44	9.72	R.

XII.—THE NATURE STUDY AND HANDICRAFTS EXHIBITION AT TRURO.

By H. M. Cundall, I.S.O., F.S.A., Steward.

It was resolved by the Council that exhibits from Secondary, Technical, Elementary and other Schools at the Nature Study Exhibition at Truro, should be confined to the County of Cornwall. The Educational Authorities concerned took the matter up warmly, but as instruction in Nature Study had only recently been developed in the Schools, they decided that exhibits illustrative of Handicrafts taught in the various centres should also be included.

Preparatory to the Society's Show, local exhibitions were held at Penzance, Helston, Redruth, Truro, St. Austell, Bodmin, Liskeard, Saltash, Launceston, Camelford and Bude.

At these exhibitions practically all the Public Elementary and Secondary Schools in the County area were represented and from the specimens submitted selections were made for the Truro Show. The exhibits were, therefore, very representative of the several districts, and may be grouped as follows—

(1) *Nature Specimens*, including useful and useless grasses, exhibits illustrating the germinating capacity of seeds, budding and grafting, pressed flowers typical of districts, twigs and foliage (with photographs) of trees, seaweeds, shells, etc.

(2) *Drawings and Paintings*, which were almost exclusively from nature.

(3) *Mensuration Charts*, illustrating Practical Arithmetic, and including such examples as the calculation of the areas of fields, contents of stacks, etc.

(4) *Modelling in Plasticine, Clay, and Cardboard*, including models of flowers, budding and grafting, schools, etc. There were also relief maps of various districts, which deserve special mention.

(5) *Woodwork*, including many useful articles for the home, the poultry yard, apiary, etc., as well as working models of mine shafts, tin stamps, etc.

(6) *Exhibits illustrating Local Industries*, and including models of china clay works, as well as those connected with tin mining, specimens of minerals, models of fishing boats, nets, crab-pots, etc.

(7) *Needlework*, including various articles of clothing, as well as ornamental work.

(8) *Kindergarten work*, including toys made from homely materials, illustrations of fairy tales, etc.

Although only the best work shown at the preliminary exhibitions had been selected, specimens were received from no less than 333 Elementary schools and eleven Secondary schools, and these were shown together in a gallery erected for the purpose.

In an adjoining building exhibits from the Agricultural, Art, Fishery and Mining schools, which are under the control of the Cornwall County Council, were shown.

Agricultural Department.—The exhibits in this section were intended to show the scope and the economic value of the technical instruction in agricultural science given in the county, and also to supply information as to the effects of various manures when applied to grass land.

Instruction in agriculture is carried out in Cornwall by means of Winter Agricultural Schools or Classes, which are held from September to May at more than a dozen centres in the county, by popular lectures and by visits to the county experimental farm. The number of students attending these classes is an ever-increasing one, and during the past session reached a total of about 350.

Among the exhibits at Truro were cards on which seventy-two varieties of agricultural seeds had been mounted by students, this being the method adopted to teach the young farmer how to identify the various seeds he purchases and their most common impurities. In addition there were large cards showing the analyses of samples of seeds of clovers and grasses by Mr. Borlase, principal of the County Agricultural Staff, the object of which was to show the farmer that the most expensive seeds are really the cheapest, giving the largest number of good seeds for the penny or the shilling. There were also eighteen large cards showing diagrammatically and numerically the composition of the sea-sand at different places on the coast from Bude on the north to Par on the south coast. The percentage of lime in the sand had been determined and was expressed as well in cwts. of lime per ton of sand. In view of the fact that one farmer had succeeded in obtaining compensation for inferior sand supplied this subject is of great importance, and these analyses were carefully examined by many farmers as well as by others. They showed that the sands of the north coast contain on an average about 6 cwt. of lime to the ton of sand, while those on the south coast rarely contain more than half this amount.

Another series of twelve cards showed the mechanical analyses of Cornish soils obtained from various parts of the county. Much interest attaches to this form of analysis and a great deal of valuable work in this direction has been carried out by Professors Hall and Russell on the soils of south-east England. The initiation of the work in Cornwall is due to Mr. Gregg of the County Agricultural Staff, who also made the analyses of the sea-sands.

Two lots of turves, six in each, from the county experimental plots showed the effects of various manures on grass. In one case a very poor field had been experimented on, and a wonderful change had been produced by one application of basic slag, bone meal, basic superphosphate and superphosphate respectively.

A series of tests, made by means of litmus paper, by a farmer of the Truro district on a dozen samples of his soil, served to show the lack of lime in some. The effect of one application of the lime at the rate of 2 tons per acre on the condition of the soil and upon the appearance of the herbage was demonstrated.

In addition to the above there were a collection of wild plants of the farm, mounted and named, a collection of eighty-two British grasses—the large majority of them from the Truro district—and a collection of 314 varieties of seeds, about half of which were those of common weeds of the farm.

Art Schools and Classes.—Drawings, designs and modelled works, illustrating the instruction given at the art schools and classes at Truro, Redruth, Liskeard, Penzance, Falmouth, Camborne, Helston, Bodmin, New Quay and Launceston, were exhibited. The works were of a satisfactory character, and exemplified the sound instruction given in the schools.

Fisheries Section.—Instruction is given in all the principal fishery ports of the county in fishery handicrafts, and the specimens shown represented work done by the fisher-lads in the classes organised by the County Council. The exhibits comprised rope-splicing, knotting, fenders, net making and repairing, blocks, netting needles, etc. The Executive Committee awarded monetary prizes to the amount of £16 to the successful students. The following is the report of the judges:

> "We have pleasure in reporting that, in our opinion, the exhibits are on the whole an improvement on those of former years, especially is this so in the Classes for Model Nets, Net Repairing and Fenders. The Wire Splicing, however, was not quite up to last year's standard: apparently the work was carried out by younger and less experienced students. The Seines submitted reflect great credit on those who made them. In our opinion this is a section to be encouraged. The arrangement

> and classification of the exhibits were exceedingly well done; in fact, it was the best arranged exhibition of the kind we have ever taken part in."

Instruction is also given at these port classes in "Navigation," and fishermen and seamen are aided in their preparation for the examination under the Board of Trade. A considerable sum is likewise spent every season in procuring Log Books for fishermen in which they enter observations relating to the movements of fish on the fishing grounds, with a view to obtaining such information thereon as may lead to the improvement of the fishing industry. Recently the Education Committee have decided that instruction should be given in these classes on the "Principles of the Internal Combustion Engine," so that fishermen may be prepared to meet the altered and changing condition of the industry.

Mining Section.—The School of Metalliferous Mining of Cornwall is an institution formed by the amalgamation of the mining schools of Camborne, Redruth and Penzance. The school buildings at Camborne contain lecture-theatres, chemical and mechanical laboratories, assaying and furnace rooms, and a museum. The school has the unique advantage of possessing the King Edward mine which is exclusively used for the purpose of giving practical instruction to the students in their profession. The exhibit shown by the school comprised a collection of specimens of ores and photographs of the mine and of the machinery and appliances provided for dressing the ores at the surface.

The Exhibition was formally opened by Mr. W. C. Pendarves, Chairman of the County Council. Amongst those present at the ceremony were the Mayor and Mayoress of Truro, Mr. R. G. Rows, the Chairman of the Cornwall Education Committee, Lady Falmouth, the Hon. John Boscawen, Lady Margaret Boscawen, the Bishop of St. Germans, Mr. F. R. Pascoe, County Education Secretary, several of the Bath and West Society's officials and others. The Mayor, who presided, remarked that the Exhibition reflected credit, not only on the educationists but on the young people of the county. Mr. Pendarves, in opening the Exhibition, observed that it was intended to show that, so far as Cornwall was concerned, they had endeavoured not only to educate children up to a certain standard in book-learning, but to teach them to use their brains in other directions.

Mr. Rows, in proposing a vote of thanks to Mr. Pendarves, remarked that there had been a time when the idea was prevalent that if folks were educated they would not do strenuous manual work. He ventured to think that in those countries, which attained the maximum of production, both manual and intellectual, the people were the most advanced and best educated.

The thanks of the Society are due to the Cornwall Education Committee for having organised such an interesting and instructive exhibition of the works of the students in the County and to the various officials of the committee in question for their valuable assistance.

XIII.—THE FORESTRY EXHIBITION AT TRURO.

By Godfrey Lipscomb, Steward.

When it was decided that there should be a Forestry Section in connection with the Truro Show it was felt by the Committee that the section might not be up to the average, bearing in mind that Cornwall is not a county where Forestry as such is much practised, and the very long distance that exhibitors except those in the West of England would have to send exhibits. It is, therefore, with all the more pleasure one is able to record that the Forestry Section at Truro was exceptionally good and that the exhibits from Cornwall were most encouraging, several estates being represented by excellent and interesting exhibits. The Forestry section seemed to be thoroughly appreciated, not only by the casual sight-seer but also by those who were well qualified to judge, and this fact is a considerable encouragement to the Committee responsible for this department,

In Class 1 the Rev. W. P. Bastard sent a small but good exhibit of foliage and sections of wood, pruning, etc.; Lord Clinton sent an excellent and probably unique collection, comprising 314 different boxes of seeds of conifers, forest trees and shrubs, and cones from 150 different varieties of conifers, all grown on his property in Devonshire, which were effectively and carefully staged. Although not an exhibit of general forestry, and consequently not eligible for competition, the judge awarded a certificate of merit and a special silver medal was given by the Society. Lord Falmouth sent an interesting collection of foliage, well mounted and carefully described, which was highly commended. Mr. Rogers contributed an interesting specimen of squirrel-damage. The excellent exhibit sent by Dame E. F. Smyth took the gold medal in this class, the exhibit, which was very comprehensive, including some particularly good photographs of considerable educational value; it was a most carefully prepared and fine exhibit, admirably staged. Miss Talbot, who was awarded a silver medal, sent a small but instructive exhibit including a plan of a large plantation of mountain land, with specification and form of contract for planting and hints as to fire prevention, etc. Lord Vivian, of Glynn, took third prize with a small but well staged exhibit upon which considerable care had been spent.

In the class for boards of Scots Pine, Lord Vivian took first prize with some good large boards 90 years old. Dame Smyth was awarded second prize with boards from a tree 100 years old, and grown on clay loam with south aspect 300 feet above sea level.

In the class for larch there was a good entry, and Dame Smyth's exhibit, consisting of some clean, well-grown boards of the same age and grown on the same soil and height as the Scots pine, was placed first. The Earl of Carnarvon was awarded the second prize for boards from a tree 80 years old, grown 350 feet above sea level, on sandy loam, with a north aspect.

In Norway spruce Lord Vivian took first prize with large, clean boards 84 years old ; Dame Smyth being second.

In the class for ash, oak and elm, the Rev. W. P. Bastard was awarded first, and Lord Falmouth second prize ; both exhibits contained nice boards.

On the whole the show of boards was better and the standard of quality was higher than for two or three years past. Considerable interest was taken in these exhibits.

In the non-competitive classes, the National Fruit and Cider Institute, Long Ashton, sent their usual excellent and instructive exhibit, and the Society again had to thank the Director of the Royal Botanic Gardens, Kew, for a very instructive collection of woods and photographs. Both these exhibits were highly commended.

It is possibly not generally recognised to what extent even a small general Forestry exhibit tests the intelligence and observation of those who undertake its collection and preparation. It is this fact which renders the exhibition so advantageous to the work of the individual forester, and, in a lesser degree, to those who visit the Forestry Section with a desire to learn, if possible, a few useful wrinkles for use on their own land. It is satisfactory that the number of those who visit the section with such an object in view is distinctly on the increase. It is beyond dispute that in recent years considerable and growing interest has been taken in, and more attention paid to, Forestry, and it is hoped that this Section of the Society's show will not only be maintained but considerably improved as time goes on. In connection with the practical benefit to be derived from it, I should again like to allude, with special appreciation, to the services of Mr. J. Ettle, F.R.H.S., who, for the past few years, has during the Show week given excellent and clear out-of-door demonstrations on the grafting, pruning and general treatment of apple trees. He is always listened to attentively, and the questions he is asked at the close of the demonstrations show as a rule that some of his audience have followed him closely with a view to applying the knowledge he has imparted. The Committee again have to thank Mr. George Marshall for kindly acting as judge.

XIV.—ANNUAL REPORT UPON THE SOCIETY'S GENERAL OPERATIONS.

By Thos. F. Plowman, Secretary and Editor.

The Annual General Meeting of Members was held on Thursday, May 29, in the Council Pavilion in the Show Yard, Truro.

The President (Viscount Falmouth) occupied the Chair, and there was a good attendance of Members, including the Marquis of Bath, Lord Strachie, and Mr. J. D. Allen, Vice-Presidents ; Sir H. H. A. Hoare, Bart., Sir H. Miles, Bart., Hon. J. Boscawen, Rev. A. T. Boscawen, Messrs. H. G. Alexander, A. Allen, G. E. Lloyd Baker, E. B. Beauchamp, C. Coles, W. F. Cooling, H. M. Cundall, I.S.O., F.S.A., E. G. Dulcken, H. M. G. Evans, H. A. Fry, A. H. Gibbs, V. T. Hill, W. Leverton, E. Lewis, G. Lipscomb, L. T. E. Llewellyn, G. Martyn, H. B. Napier, E. P. Rogers, G. Symons, I. de C. Treffry, P. Veitch, E. G. F. Walker, J. Warne, T. Warne, A. R. White, Prof. J. Penberthy, and others.

The Minutes of the previous Annual General Meeting having been read and confirmed, the Marquis of Bath moved, Mr. H. G. Alexander seconded, and it was resolved, that Sir J. T. D. Llewelyn, Bart., be elected President of the Society for the ensuing year.

On the motion of Mr. W. F. Cooling, seconded by Mr. P. Veitch, the gentlemen named on page *xciii* of the Appendix to this volume were elected members of the Council for the years 1913-15.

The accompanying Report, which had been received and adopted at a meeting of the Council, held on the previous day, was then submitted to the meeting :—

" The Council, in presenting their Annual Report, congratulate the members upon once more visiting, after a lapse of more than fifty years, the Capital of the Duchy of Cornwall.

"The enthusiastic heartiness with which the proposal to visit the county was received, and the efforts since put forth to promote the success of the Show, have afforded pleasant testimony to the kindly feeling with which the old Society is regarded in this portion of its sphere of operations. Several Cornish boroughs were desirous of welcoming the Society, but, when once the choice had fallen upon Truro, the whole county joined hands in support of the visit with a unanimity thoroughly in the spirit of its ancient motto, 'One and all.'

"In this connection the Council desire to acknowledge especially the practical friendliness of the Royal Cornwall Agricultural Association, which not only suspended its own Show, but made acceptable additions to the Prize List. Your Council have been glad to reciprocate by adding several Classes for breeds specially associated with the district, and by conferring the same privileges, as to entries and admissions, upon the members of the Association as are enjoyed by the members of the Bath and West Society.

"A comparison of the entries when the Society last visited Truro in 1861, with those included in the present Show, testifies to the growth of the Society in the interval. In 1861, the entries of Live Stock numbered 697 as against 1,520 this year. In 1861, there were no classes for farm produce; on the present occasion there are 257 entries in this section. In 1861, there were no butter-making or milking competitions; this year there are no less than 427 entries in these classes.

"The growth of the implement and machinery section of the Show has been even more marked, for in 1861 the shedding under which it was exhibited was 1,997 feet in length, whereas this year it ran to 3,877 feet, whilst exhibits on uncovered ground occupied 2,097 square feet in 1861 as against 25,519 this year.

"These figures are the more remarkable from the fact that in the Live Stock Classes the Society has in recent years, limited the number of entries an exhibitor can make in one class, and has also adopted a more restrictive policy than formerly with respect to the nature of the exhibits in the Implement Section of the Show.

"Since the last visit to Truro the Council, so far as their resources permitted, have continued their policy of maintaining and adding to the interest and utility of the Annual Show by the institution of fresh departments, and in recent years the educational value of the Show has been materially increased by the addition of exhibitions illustrating Nature Study and Forestry, whilst Demonstrations showing the most approved methods of tree-pruning, grafting and spraying are given by experts.

" The Council have not limited their attention to the Annual Show, but, when opportunity has offered, have lent their support to various objects for the advancement of agriculture and kindred industries. The Society makes an annual grant of £100 to the National Fruit and Cider Institute, now attached to Bristol University, the establishment of which was due to the practical and scientific research work initiated at Butleigh, and conducted for some years, conjointly by the Society and the Board of Agriculture. Experimental and research work is being actively carried on at the Institute, which there is every reason to believe is of essential service to those engaged in cider-making and fruit-growing. An arrangement has been made under which members of the Society can obtain from the Institute, free of charge, analyses of cider apples and perry pears.

" The Institute has also undertaken to distribute to the Society, or to persons nominated by it, free of charge, a selection of trees which have been worked with the best varieties of cider apples and perry pears, and has conferred upon the Society the privilege of nominating, free of all fees, one student for a course of instruction in the theory and practice of fruit-growing, cider-making, etc., to be held by the Institute at the University of Bristol.

" With a view to assisting farmers and others in dealing with insect and other pests which affect agriculture, horticulture, etc., the Council have availed themselves of an offer from the Board of Economic Biology of the University of Bristol, to investigate the nature of any insect or other pest, and report upon it free of charge.

" Among the various agricultural questions to which the Council have given attention, has been that of Johne's disease, the Board of Agriculture and Fisheries having invited them to consider it. The matter having been referred by the Council to the Experiments Committee, the latter presented a report upon the subject which was adopted by the Council. It demonstrated the serious character of this disease, which affects both cattle and sheep, and stated that the disease had been known for a long time, but not under its present designation ; that, so far as the Committee had been able to ascertain it had been prevalent, as represented by isolated cases ; and that, when it had taken an epidemic form, it had occasionally caused considerable loss. The Council, in communicating the report to the Board, expressed an opinion that the latter should take steps, through their veterinary advisers, to have suspected cases of the disease investigated on the farms on which they occur. The Society's Journal Committee followed up the matter by arranging with the Society's Veterinary Inspector (Prof. J. Penberthy) to contribute an article upon the subject to the current issue of the Annual Journal. This has attracted a good deal of attention, and has been regarded as a valuable contribution to the literature of the subject.

"The Council have recently urged upon the Argentine Government to follow the example of other Powers and reduce the existing unnecessarily long period, viz., six months, of embargo at present imposed on the importation of British Live Stock after the most recent outbreak in this country of foot and mouth and other seriously contagious diseases; and to limit such embargo to stock coming from that portion only of Great Britain where such outbreak has occurred. The Council have also, through the Secretary of State for Foreign Affairs and the President of the Board of Agriculture and Fisheries, asked the British Government to use its influence with the Argentine Government with a view to obtaining a relaxation of the conditions referred to.

"The Council regret that during the past year death has deprived the Society of several old and valued supporters, foremost among them being Viscount Tredegar, one of its Vice-Presidents, who had twice filled the office of President with much distinction. He was endeared to the country at large, not only as one of its most gallant defenders, but also for the devotedness with which he discharged the various calls made upon him in the public positions he occupied. By those in whose midst he lived he was deservedly held in the most affectionate regard as the kindliest of neighbours and the most generous of friends. The Society, as well as agriculture generally, has good reason to hold him in grateful remembrance as one who was always ready to promote their best interests, not only by his practical advice and experience, but also by his continuous and unstinted support.

"Among other good friends of the Society who have recently passed away were Mr. C. D. Phillips, a member of Council, who rendered the Society essential service, especially whenever South Wales or Monmouthshire was visited, and Mr. E. Webb, also a member of Council and a staunch supporter of the Society of many years' standing.

"The Board of Agriculture and Fisheries having requested the Society to appoint a representative to attend the International Congress of Agriculture, to be held at Ghent, Belgium, in June next, the Council have appointed Mr. G. E. Lloyd Baker to this office.

"The Council have much pleasure in recommending that Sir J. T. D. Llewelyn be elected President for the ensuing year; that Viscount Falmouth, in recognition of the valued services he has rendered as President, be elected a Vice-President of the Society;

and that the gentlemen named on the Agenda Paper be elected members of Council for the years 1913–15, in the room of those retiring by rotation.

"The Council have accepted a very cordial invitation from Swansea for the Society to hold its 1914 Meeting in that town. The heartiness with which the Society was welcomed there in 1892, and again in 1904, coupled with the success attending the Show on each of these occasions, justify the Council in congratulating the members not only upon the prospect thus afforded, but also upon the friendliness towards the Society represented by the invitation."

The adoption of the Report was moved by the President, seconded by Mr. E. G. Dulcken and agreed to.

The Rev. A. T. Boscawen moved, Mr. G. Martyn seconded, and it was unanimously resolved:—

"That the thanks of the Society be presented to the Mayor of Truro, the Local Committee, and the Royal Cornwall Agricultural Association, for the cordiality with which they have received the Society and for their efforts to promote the success of the Meeting."

This was responded to by the Hon. John Boscawen.

On the motion of Mr. J. D. Allen, seconded by Mr. H. A. Fry, a vote of thanks was accorded to the Judges.

Sir Henry Miles, in moving a vote of thanks to the President, referred to the very active interest he had taken in the work of the Society during the past year, whilst he had presided over their meetings with the greatest ability and geniality.

Mr. G. E. Lloyd Baker seconded, and Viscount Falmouth having briefly returned thanks, the proceedings terminated.

XV.—THE NATIONAL FRUIT AND CIDER INSTITUTE.

By B. T. P. Barker, M.A., Director.

An account was given in the last volume of this Journal of the developments which had taken place in connection with this institution, resulting in its association with the University of Bristol and the establishment by the University of a Department of Agricultural and Horticultural Research with its headquarters at the Institute at Long Ashton, which thus now serves as the Research Station of the Department. As a result, the work of the Institute as a distinct body cannot well be distinguished from that of the station as a whole; and consequently the annual account of the former contributed to this "Journal" must become now practically a report of the work of the joint institution. The additions made to the research staff enumerated in last year's Report have enabled the scope of the work generally to be considerably increased in spite of the inadequacy of the temporary laboratory accommodation: and a complete account of it would occupy more space than is here at disposal. This article will therefore be restricted to a brief survey of the developments during the year, and of some of the work in hand likely to be of fairly general interest. The accounts of the various researches have been furnished by the members of the staff responsible for the work in each case; and I should like to take this opportunity of acknowledging their assistance in the preparation of this report. In view of the interest taken in soil questions Mr. Gimingham, in dealing with the work on soils, has added a general discussion on the practical value of soil analysis. The work on Cider Tannins, by Dr. Nierenstein and Mr. C. W. Spiers, B.Sc., and on Apple Canker, by Mr. S. P. Wiltshire, B.Sc., has been carried on at Bristol University in conjunction with this Department; and I am indebted to those gentlemen for the contributions dealing with those sections.

NEW BUILDINGS AND OTHER DEVELOPMENTS.

Considerable additions in the way of buildings have been made during the year. These have been erected on land purchased from the Ashton Court Estate in 1912. The land thus acquired amounts to ten and a half acres, and on it were already situated the previously existing buildings of the Institute and a pair of cottages, one of which has been converted into a foreman's residence and the other into offices and temporary laboratories.

The chief addition has been the block of buildings comprising the new laboratories. One of the greatest difficulties in the earlier period of the Institute's history had been the insufficiency of the laboratory accommodation and the inadequacy of its equipment. The new building will remove that obstacle. It is divided into a series of separate laboratories, each of which is devoted to a special subject. It includes rooms for chemistry, entomology, fermentation work, mycology, and plant physiology, as well as an assistant's laboratory, incubator room, library and committee room, dark room, museum and lecture room, heating basement, stores loft and basement, and the Director's laboratory and private room. Attached to it is a small greenhouse for experimental purposes. Since there is no public supply of gas available at Long Ashton, it has been necessary to instal a gas-making plant and gas-holders, the kind of gas selected for use being oil gas. A separate building, situated close to the laboratories, has had to be provided for this purpose. Fortunately it has not been difficult to obtain an adequate water supply, connection having been made with the Bristol Waterworks Company's high pressure main from the Barrow reservoirs, which passes close to the building. The necessary laboratory fittings have now been added, and the staff were able to begin work in the building at the beginning of 1914. The building has been wired for electric current for lighting and laboratory use: and in due course provision will be made for a supply of current. The building, which is a one-storey structure, is situated on a bank at the south side of the young cider orchard, above which it stands sufficiently high for the light not to be interfered with as the trees increase in size. It is 150 feet long and 35 feet wide, with a projecting wing at the east end.

For several seasons the experimental cider work had been seriously hampered and curtailed on account of inadequate accommodation and equipment. A large new wing, which will be available for next season's work, has now been added to the existing cider buildings. It is a three-storey building, the upper floor of which will serve as a fermentation room, the ground-floor as a machinery room, and the three-parts-underground basement as a storage cellar. The mill and press remain undisturbed in the old part of the building; but the new machinery, including carbonating, bottling and other plant, will be placed in the new wing. Certain alterations to the old buildings will be made before the next cider-making season to provide, among other things, better accommodation for the storing and washing of the cider fruit, and a small fermentation room, the temperature of which can be under control.

Other buildings which have been erected include a residence for the Manager, a three-quarter span vinery, 75 feet long, and an orchard house for experimental work on fruit trees in pots, 60 feet long by 25 feet wide. A walled-in garden, about one acre in area, has been arranged, and it is in this that the greenhouses are situated. The garden will be used mainly for the cultivation of seedlings and for the purpose of experimental work which needs special protection or which for other reasons cannot satisfactorily be conducted in the open plantations.

More space being required for experimental market fruit plantations, it was decided to sacrifice the old cider orchard, which had for some time ceased to bear profitable crops on account of the age and defective condition of the trees. The latter have now all been removed and the ground has been cultivated. An acre plantation of small fruits, including black and red currants, gooseberries, raspberries, strawberries, loganberries, and the more recent introductions related to the latter, was planted last winter; and half an acre has been devoted to a collection of strains of crab, free, and Paradise stocks obtained from practically all the leading fruit nurserymen in the country and used by them for the propagation of apples. The primary object is to test the value of the individual strains with the view of selecting the most useful for general propagation purposes. The remainder of the ground is being devoted to a collection of half standard plums and additional plots of small fruits.

INVESTIGATIONS OF CIDER PROBLEMS.

Single Variety Ciders and Perries.—Following the usual practice, ciders and perries were made during the season 1912–3 on a practical scale in the ciderhouse from several different varieties of cider and, perry fruit in order to test the vintage qualities of those kinds and, in certain cases, to ascertain the extent of variation from season to season and the influence of the soil on which the fruit was grown, and of other local conditions. The list of varieties and an analysis of the juice in each case is given in the accompanying tables.

In each case the pomace was pressed immediately after milling, and allowed to ferment naturally in cask, without keeving, until the specific gravity had dropped to 1·030–1·040, when the liquor was filtered. In most instances a second filtration was necessary.

Details of the characters of the individual ciders will be published in the Annual Report of the Institute for 1913, and they need not be further considered here. A few comments on the general character of the ciders of that season may, however, be of some interest.

As was expected, after the cold, sunless, and wet summer of 1912, the vintage quality of the fruit was poor; though the improvement in the weather conditions during the autumn undoubtedly had some beneficial effect, so that the situation was partially saved. The comparatively low specific gravities in the above tables indicate the general shortage of sugar in the fresh juices. It was the first season since the establishment of the Institute that the average gravity fell below 1·050. There were a few outstanding instances which are difficult to account for. Thus, the high gravities of Yellow Styre and Moorcroft, two varieties of usually good but not superlatively high gravity, and the abnormally low gravities of Dymock Red and Broadleaf Norman,

SINGLE VARIETY CIDERS, SEASON 1912–13.

Name of Variety.	District where grown.	Date of making.	Specific Gravity of Fresh Juice.	Malic Acid per cent.	Tannin per cent.	Rate of Ferment-ation at 28° C.	Specific Gravity. May 1st, 1913.
APPLES—SHARP VARIETIES.							
Butterbox	Barton	December	1·046	·53	·152	5·0	1·011
Red Soldier (No. II)	Tenbury	November	1·052	·93	·208	5·8	1·012
Ditto (No. I)	Tewkesbury	November	1·051	·76	·166	6·2	1·013
Dymock Red	Ledbury	November	1·038	·42	·156	5·2	1·012
Frederick	Newton Court	November	1·047	1·01	·110	9·0	1·013
Cap of Liberty	South Petherton	November	1·045	·75	·170	4·8	1·016
Lady's Finger	Long Ashton	October	1·046	·65	·086	10·2	1·017
Pull Court Red	Tewkesbury	November	1·046	·76	·158	3·7	1·017
Foxwhelp	Ledbury	November	1·046	·68	·138	4·8	1·020
Fair Maid of Taunton	Martock	November	1·047	·55	·192	4·2	1·021
Skyrme's Kernel	Tewkesbury	November	1·043	·38	·142	4·2	1·021
Cherry Pearmain	Marden	November	1·043	·38	·142	4·2	1·021
Bickington Grey	Littlehempston	November	1·047	1·00	·146	7·7	1·022
Yellow Styre	Tewkesbury	November	1·059	·80	·102	3·3	1·022
Sam's Crab	Marden	November	1·044	·37	·098	5·8	1·023
Lambrook Pippin	East Lambrook	January	1·043	·51	·215	2·7	1·028
SWEET VARIETIES.							
Woodbine	Newton St. Cyres	November	1·050	·38	·162	8·7	1·003
Slack-ma-Girdle	Barton	December	1·042	·35	·126	5·8	1·011
Ditto	Newton St. Cyres	November	1·047	·28	·114	5·2	1·012
Devonshire Sweet	Bridgwater	December	1·050	·27	·140	6·4	1·018
Newton Sweet	Newton St. Cyres	November	1·048	·23	·194	6·0	1·019
Sweet Alford (No. II)	Newton St. Cyres	November	1·051	·31	·164	8·5	1·028
Ditto (No. I)	Barton		1·050	·24	·132	4·3	1·030

BITTERSWEET VARIETIES.							
Newton Court	Newton Court	November	1·050	·42	·280	7·7	1·003
Brownthorn	Tenbury	November	1·051	·24	·198	6·5	1·006
Ashton White	Long Ashton	October	1·055	·33	·324	7·2	1·010
Strawberry Norman	Ledbury	January	1·043	·19	·240	5·7	1·010
Spreading Norman	Ledbury	November	1·048	·36	·472	8·2	1·012
White Norman	Tenbury	November	1·056	·28	·238	5·5	1·013
Dabinett	Long Ashton	December	1·049	·35	·238	4·5	1·013
Royal Wilding (No. II)	Tenbury	November	1·054	·27	·240	6·5	1·013
Ditto (No. I)	Hardwicke		1·046	·18	·224	5·7	1·018
Ditto (No. III)	Marden	November	1·045	·17	·170	2·8	1·021
Styre Wilding	Ledbury	November	1·050	·24	·210	7·5	1·015
Coat Jersey	Martock	November	1·047	·18	·266	10·0	1·020
Pytheres	Newton Court	November	1·046	·32	·154	7·2	1·021
Pocket	Littlehempston	November	1·047	·27	·214	6·2	1·021
Broadleaf Norman	Long Ashton	November	1·038	·36	·158	5·7	1·021
Newton Red Jersey	Newton St. Cyres		1·045	·29	·186	3·3	1·022
Chisel Jersey	East Lambrook	December	1·055	·32	·465	8·2	1·023
Early Red Jersey	Long Ashton	October	1·048	·21	·174	4·6	1·025
Red Norman	Tenbury	November	1·055	·30	·262	3·7	1·029
PEARS.							
Newton Court	Newton Court	November	1·045	·40	·066	9·5	1·009
Oldfield and Huffcap (No. 1)	Hardwicke	October	1·058	·49	·056	7·5	1·011
Ditto ditto (No. 2)	Marden	November	1·053	·41	·188	4·2	1·026
Oldfield (No. 1)	Long Ashton	November	1·042	·43	·068	15·5	1·014
Ditto (No. 2)	Tibberton	December	1·047	·31	·058	6·2	1·018
Ditto No. 3)	Castlemorton	October	1·046	·53	·076	6·2	1·023
Ditto (No. 4)	Tewkesbury	October	1·059	·52	·178	2·8	1·027
Thorn	Castlemorton	October	1·042	·52	·060	4·3	1·018
Pint	Tewkesbury	October	1·047	·71	·066	7·7	1·020
Spice	Castlemorton	October	1·047	·45	·170	5·3	1·023
Butt	Malvern	October	1·047	·48	·104	5·0	1·023
Huffcap	Tibberton	December	1·053	·34	·160	6·2	1·026
Moorcroft	Hardwicke	September	1·063	·60	·070	4·3	1·032

two kinds generally above, rather than below, the average, may be instanced. Also the curious cases of the high gravity of No. 4 Oldfield as compared with the low gravities of Nos. 1, 2, and 3, of the same sort, and the unusually low gravity of Kingston Black No. 5, as compared with the average of the remainder of that sort.

It would not have been surprising to find the acidities ranging decidedly high; and indeed for the sweet and bitter-sweet apples that proved generally to be the case. But where perhaps the most marked increase above the normal might have been expected, viz., in the sharp varieties of apples, the general tendency was towards a figure below the average. The Kingston Blacks generally, Cap of Liberty, and Skyrme's Kernel were conspicuous examples of that tendency.

The following ciders were made from the Kingston Black variety alone. Their treatment was the same as that adopted for other single variety ciders.

No.	District where grown.	Date of making.	Specific Gravity of Fresh Juice.	Malic Acid per cent.	Tannin per cent.	Rate of Fermentation at 28° C.	Specific Gravity. May 1st, 1913.
1	Ashill	November	1·052	·55	·168	5·1	1·020
2	Tewkesbury ..	November	1·052	·47	·162	3·2	1·028
3	Ripple	December	1·054	·44	·150	5·8	1·020
4	Tewkesbury ..	December	1·043	·35	·142	4·7	1·020
5	Oldbury-on-Severn	December	1·038	·29	·136	3·3	1·015
6	White Lackington	December	1·054	·43	·148	5·7	1·022
7	Norton Fitzwarren	December	1·056	·40	·120	6·7	1·028
8	Marden	December	1·049	·45	·170	4·8	1·011
9	Tibberton ..	December	1·048	·44	·188	2·4	1·030
10	Long Ashton ..	November	1·046	·43	·122	3·5	1·015
11	Staplegrove ..	November	1·055	·48	·144	4·3	1·023

The tannins practically throughout were on the low side, although except in some of the perry pears and bittersweet apples not markedly so. Several of the bittersweet results were abnormally low, the amount failing to reach the normal lower limit (·2 per cent.) for the class. The tannins of the sharp apples on the other hand were by no means strikingly low.

The rates of fermentation were generally according to expectation on the high side, but otherwise did not present any features of special interest.

As regards the ciders and perries themselves there was a general lack of body and fruity character, examples of special merit being conspicuous by their absence. On the other hand there were few really unpleasant kinds: and the general conclusion was that they were a fairly pleasant lot, mainly on the thin side and more or less devoid of special character.

The most striking feature noted was the unusually marked susceptibility to acetification after the primary fermentation had ceased. The latter, although more rapid than usual, appeared to exhaust itself very quickly, unlike that of rapid examples in other seasons, which generally remained persistent. As a result the amount of acetification of draught cider during the summer of 1913 and also the prevalence of " fliers " in the bottled cider was much greater than the normal.

The vintage of 1912–3 therefore was one which probably yielded few really good ciders and perries likely to improve with age; and the majority were probably at their best during the spring and early summer following making. These features of early maturity and poor keeping quality were therefore exactly the opposite of those of the 1911–2 vintage.

The Acetification of Cider and Perry.—The commonest disorder to which cider and perry are liable is, undoubtedly, acetification. In slight cases the effect upon the general character of the liquor is not very marked, and many consumers drink it without detecting anything wrong. In more severe cases the flavour of the cider or perry becomes very adversely affected, acquiring a vinegar-like character, which is not only decidedly unpleasant to the palate, but must also, in bad examples, have an injurious effect on the digestive organs. In extreme cases the liquor becomes undrinkable. On account of the extreme prevalence of this disorder— there are few six-months-old draught ciders made under ordinary circumstances which do not show some trace of it—and the difficulty of keeping it under entirely, the malady is a serious one for the maker, although with a little care there is no reason why any case should develop into a severe one.

All fermented liquids which contain relatively low amounts of alcohol—less, for example, than six to eight per cent.—are susceptible, the smaller the amount of alcohol the less being the power of resistance in general. Cider and perry, as drinks of weak alcoholic strength normally, are therefore particularly liable.

The disorder has long been known to be due to the action of a bacterium which possesses the power of acting on alcohol in the presence of air or oxygen,—oxygen being the essential factor—converting it into acetic acid, the characteristic constituent of vinegar. On cider left exposed for several days to air a growth in the nature of a semi-transparent film of varying thickness quickly appears. This consists of a mass of the bacteria in question and is commonly spoken of as the vinegar plant or " mother." In Devon such growths are frequently termed " mudes." The name of this type of acetic acid bacillus is *Bacterium xylinum*. A number of different kinds of bacteria capable of producing acetification have from time to time been met with in various fermented liquors such as wines and beers, the organism named being one. All kinds, however much they may differ in other respects, have in common the power of acetification.

Bacterium xylinum is the form generally associated with cider: but little attention hitherto seems to have been given to the subject as regards the kinds, if more than one, indigenous to cider. An investigation is therefore desirable, since the habits and, possibly also, the conditions of growth may vary somewhat in character. The subject has received attention at the Institute during the past year, ciders in various stages of the disorder having been collected from a number of distinct sources. The organisms from these ciders have been isolated, and tests made as to their acetic-acid-producing properties. At the present stage of the work it is evident that at least four different types of acetic bacteria are liable to occur in cider. The characters and conditions favouring or checking the growth of these organisms are now being studied in order to ascertain whether the same general form of treatment to check the disorder will apply equally well to all forms, or whether each kind requires separate consideration.

It has been stated above that cider and perry in cask generally shows more or less serious traces of acetification within six months or so after making. This is due to a number of distinct possible causes, of which the more important may here be briefly referred to. It has long been known that cider and perry fruit during storage prior to milling is exceedingly liable to acetify or " heat " under certain conditions. Storage in too deep or large a heap, wetness of the fruit, a high temperature, and the presence of bruised, broken, or decaying fruit in the heap, are all causes favouring acetification during storage. They give rise to conditions suitable to the free development of the acetic bacteria on the surface of the sound fruit or in the tissues of the bruised and broken fruit. Since the bacteria appear to occur invariably on the skin of the fruit in nature, the cider maker is obliged to start with infected material, and has, therefore, to devote his energies to the prevention of the multiplication of the pests rather than to the prevention of infection. After milling, the bacteria have abundant opportunity for activity, unless care is taken. Soaking or maceration of the pomace for several hours before pressing gives rise to trouble frequently, especially if the weather is inclined to be warm, on account of the somewhat considerable exposure to air which generally takes place. The practice of keeving the juice is at times risky for the same reason, unless measures are taken to bring it into a condition of fermentation rapidly. The solid matter which rises in the earliest stages of fermentation to form the brown head quickly becomes strongly acetic in character, if care is not taken to prevent access of air; and it should be removed by skimming, racking, or other means before it has time to cause much damage. During the stage of active alcoholic fermentation the chances of acetification are not serious on account of the carbon dioxide given off during fermentation displacing the air, unless a large surface of the juice is exposed, or unless fermentation is on the slow side. When active fermentation approaches its end the danger increases considerably, unless air is kept away from the juice. After fermentation has ceased the risk is proportionately greater. Cider and perry are peculiarly difficult to deal with at this stage, not only on account of their low alcoholic strength, but also because of the completeness with which the alcoholic fermentation becomes played out in the majority of cases. The ciders of 1912–3 were particularly troublesome for this reason. So long as sufficient fermentation can be maintained to keep the cider charged with carbon dioxide, the liquor is to a great extent self-protected against acetification: and it is for this reason that the old practice of adding raisins, or other substances capable of encouraging the continuance of very slight fermentation after the final racking, was found advantageous in many cases. The modern custom of filtration has, however, greatly increased the risks of trouble at this stage on account of the liability of its leaving the liquor dead and incapable of after-fermentation in many instances. Finally, after the ciders have been put away in the store casks, and the latter filled to the bunghole and tightly bunged, great deterioration often occurs on account of the evaporation which seems to take place more or less regularly through the pores of the wood. An air space is thus formed above the liquor in the cask, and the presence of air results in acetification.

With so many opportunities for the development of the disorder it is not surprising, therefore, that it is so common. Experiments with the object of reducing the risk at each of the various stages just indicated have been in progress for several seasons with some measure of success; and during the past season a number of methods in use on the Continent in the wine and cider industries have also been tried with results of more or less promise. Among the various systems tested may be mentioned (*a*) the washing of the fruit, prior to milling, with hot or cold water with the object of removing a large proportion of the bacteria, and in the former case also of injuring or killing them by heat; (*b*) the addition of cultures of active yeast to the freshly pressed juice to induce fermentation with the least possible delay; (*c*) the use of vent tubes permitting the escape of the gases formed during fermentation and preventing the access of air at all stages of fermentation; (*d*) sterilisation, partial or complete, of the juice by heat, sulphuring, filtration and other methods, followed by fermentation with pure cultures of yeast; (*e*) coating the casks with paraffin wax and other substances capable of rendering the wood of the casks impermeable to air and moisture, either by external or internal application; (*f*) covering the surface of the liquor with a layer of a tasteless oil; and (*g*) the use of bungs of special construction for the store casks. Instead of the usual type, which range from two to three inches in depth, the bungs in question are about six to eight inches long, slightly tapering, and wrapped with waxed canvas. They are driven into the bunghole of the cask sufficiently far for the end in the cask to dip well into the cider. This keeps the wood of the bung constantly moist, so that shrinkage is prevented and the bunging of the cask kept as air-tight as possible.

During the last two or three seasons many applications for advice with regard to the conditions of various bottled ciders have been received; and since the troubles have been mainly due to acetification, reference may be made to them conveniently here. Generally the chief cause of complaint was not so much the presence of an acetic taint in flavour as the occurrence in the liquid of fine floating filamentous material, commonly termed "fliers." These are simply growths of acetic bacteria, which in themselves would be practically invisible if it were not that, by the collection of minute fragments of the cell walls of the apple tissues remaining in the cider, yeast cells, and accidental solid particles of other nature, they are rendered objectionably conspicuous. The presence of these floating masses, if the cider at the time of bottling was in perfectly brilliant condition, indicates either (*a*) that air has obtained access to the contents owing to a defective cork or to the bottle being stored on its base and the cork thus permitted to dry, or (*b*) that the cider has been in too dead a condition as regards alcoholic fermentation for it to charge itself with carbon dioxide in time to restrict the growth of the bacteria. The former causes can easily be avoided with reasonable care; but the latter is by no means so simply dealt with, unless carbonation before bottling is regularly practised. What it means precisely is that, for the particular cider in question, the bottling has been performed too late in the season. It may appear from this that the remedy should be obvious and simple, viz., earlier bottling. In practice, however, there are difficulties in two directions. Firstly, while too late bottling causes the presence of "fliers," too early bottling results in the formation of too much yeast deposit and too much gas in bottle, owing to relatively excessive fermentation after bottling. It is easy, in attempting to avoid the evil in one direction, to overstep the mark and meet the other trouble. Secondly, it is at present difficult for makers to determine the correct time at which to bottle a given cider, unless they have a fairly complete history of the course of fermentation of the cider in question. Although March and April, the latter especially, are generally considered the best months for bottling, that view is correct only so far as the majority of ciders are concerned. Each cider has a proper period for bottling: but the periods of individual ciders do not necessarily coincide, and in some cases vary widely. Thus, for example, a cider which has fermented slowly can generally be bottled to best advantage in February or even earlier in many instances: another which fermented at a moderate rate, in March or April: and yet another which underwent rapid fermentation, in May, June, or even later. Again, the cider made from certain fruit in some years may be best bottled at one period, and in other years at quite different times. Hence the problem of the time of bottling to avoid the formation of these acetic growths is decidedly intricate for those who rely upon the natural conditioning of their bottled ciders; and it calls for close attention to the course of fermentation of each individual cider, if any degree of certainty in the results is to be expected.

The Estimation of Tannin in Cider.—The tannin of apples, although present in comparatively small proportion, is an important constituent of the juice. Its presence is considered by many to affect favourably the keeping qualities of the cider; and it may play a leading part in the clearing of the juice in the early stages after pressing.

It takes part also, in a manner not yet fully worked out, in the chemical changes accompanying the secondary fermentation usually known as the "sickness" of cider. The accurate determination of the tannin is therefore a matter of some importance; but before the present time no really satisfactory method has been worked out. Two methods of estimation actually used for cider may be referred to, the first being that of F. J. Lloyd [Report on Investigations on Cider Making (Board of Agriculture), pp. 5–6] and the second that recommended by Warcollier (Pomologie et Cidrerie, p. 486).

Lloyd titrates the juice directly with potassium permanganate according to the well-known method of Löwenthal, consequently including in the tannin content all the permanganate reducing substances present in the cider. Warcollier removes the tannin by means of catgut, which is allowed to remain in the liquid about six days ; the method being thus too slow for constant use.

Botanists have devised methods for the estimation of tannin depending upon its precipitation by various reagents. Unfortunately, the fact that other substances present in plant juices are precipitated along with the tannin renders these methods valueless.

The method finally adopted was a modification of that of Körner and Nierenstein (Chem. Zeit. 36, 31, 1911), which consists in removing the tannin with casein and determining the total solids before and after detannizing. In this case the tannin removed was determined by the difference in the titration of the cider before and after detannizing. A solution of permanganate, of about 1 gm. per litre, is used, the titrations being carried out in a porcelain dish as in the method of Löwenthal. The casein used must be carefully freed from fat by long continued extraction with ether ; and two quantities of 1 gm. each are shaken for 15 minutes with 50 cc. of the cider. The tannin is thus completely removed, *but no other constituent of the cider.* Since the tannin of apples has not yet been isolated in the pure state, the results must be expressed, for the present, in terms of commercial "pure tannin." These commercial "pure tannins" are not homogenous substances ; and, therefore, the value obtained from the titration of a number of different samples, was compared eventually with that obtained from ammonium oxalate, a substance easily obtained in a pure state. A number of representative types of cider were analysed, and in all cases a lower, and more nearly correct tannin content was found than that obtained by direct titration alone as in Lloyd's method. A more detailed account of this method has been published in the "Journal of Agricultural Science," Vol. vi, Pt. 1, 1914.

INVESTIGATIONS ON SPRAY FLUIDS.

The Fungicidal Action of Bordeaux Mixtures.—In recent reports mention has been made of the investigations undertaken to ascertain by what means Bordeaux mixtures are effective as fungicides. The question is one which has a direct practical bearing, since unless we have an accurate knowledge of the manner in which this spray fluid works, we cannot hope to improve its efficiency, nor are we in a position to discover what are the essential conditions in the preparation or the application of the mixture. The problem is this—it is well known that compounds of copper which will dissolve in water are direct poisons to both animal and vegetable life, but in all forms of Bordeaux Mixtures, though copper is the essential constituent, it is present, not dissolved, but in an insoluble condition. How then do these insoluble copper compounds prevent the growth of parasitic fungi upon the foliage on to which the Bordeaux mixture is sprayed? Our earlier experiments led to the conclusion that, while probably several distinct actions are concerned, yet the most important and that on which the efficiency of the mixture depends is a solvent action on the part of the fungus itself when it comes into direct contact with the particles of the copper compound on the surface of the leaf. In other words, provided that the fungus is in sufficiently close contact with one or more particles of the insoluble copper compound, it will itself dissolve and absorb sufficient of the copper to produce a fatal result. The special point to notice here is that there appears to be no general atmospheric action* by which copper becomes soluble and that the solvent action of the fungus is only effective at very short range. Germination and growth of the fungus spore may occur in the immediate vicinity of the copper compound so long as it is not quite close enough for copper to be dissolved. Evidently, therefore it is of the greatest importance in practical spraying to cover the foliage with the mixture as completely as possible.

These conclusions were drawn mainly from experiments in which the behaviour of various types of fungus spores towards the Bordeaux Mixture deposit was observed under the microscope; and recent work has served to confirm and extend them. The experiments with fungus spores were repeated with numerous modifications; and the results have demonstrated the excretion of substances from living fungus cells which have a solvent action on the insoluble copper compounds of Bordeaux Mixture, the copper so rendered soluble being absorbed with toxic effect. The distance between the cell and the copper compound is the chief point in determining whether the action shall take place.

In order to obtain further light on the subject, the action of other types of living plant cells upon the copper compounds has been studied. In the first place the fine root-hairs on the roots of seedling plants were utilised, beans and peas being employed in many experiments. The results here were exactly analogous to those with fungus spores: contact with the copper compound destroyed the root-hairs, whilst those not actually touching escaped all injury. Not only the root-hairs but also the actual surface of the root was blackened and injured just where the copper compound touched it and not elsewhere. These points can be exceedingly well demonstrated by an experiment carried out with mustard seedlings. Bordeaux Mixture was allowed to settle and the pasty mass of the copper compounds at the bottom spread on a strip of flannel in such a way that the surface consisted of portions covered with the paste alternating with untreated portions. The whole surface was then sown evenly with mustard seeds and the flannel strip kept moist by dipping the ends in water. In the course of a day or two it was found that all the seeds on the treated areas were killed before, or immediately after, germination, while on the untreated areas vigorous growth took place and a plentiful crop of young mustard plants sprang up. Those seeds lying just on the junction of a treated and untreated area grew into healthy seedlings provided the young root emerged on the side remote from the Bordeaux Mixture paste; on the other hand, if the root grew at once into the paste death resulted. Copper was dissolved only on actual contact between the copper compound and the growing root tip.

---

* This part of the subject has already been dealt with in detail previously.

Numerous experiments of this kind have demonstrated conclusively that thin-walled actively growing cells have a direct solvent action upon the copper compounds of Bordeaux Mixtures. When, however, similar tests are carried out with thick-walled cells such as, for example, the cuticle of apple leaves, we find a different state of affairs. Such cells are extremely resistant to the passage of substances in solution and do not appear to exert any solvent action so long as the wall is uninjured. This has an important bearing on the question of scorching, for experiments have shown that little or no scorching results from spraying if the apple foliage has been protected from all sources of injury. Unfortunately under ordinary conditions it is extremely difficult to find leaves entirely free from injury; and when, through bruising or insect attack, the interior thin-walled cells of the leaf are exposed to contact with the Bordeaux Mixture a solvent action takes place and the dissolved copper, spreading from cell to cell, causes a "scorched" spot.

Many other types of plant cells have been experimented upon; and, finally, it has been shown that the nature of the cell wall is the factor which chiefly determines the result of the interaction, if any, between plant cells and the copper compounds of Bordeaux Mixtures.

Winter Spray Fluids.—Winter spray fluids may be divided into two kinds, viz., those that seek to kill by direct chemical action, and those which aim at covering the tree with a thick coating of material that shall mechanically prevent egg hatching. Of the latter lime and salt is the type. This wash is made up of lime, salt and water in the proportion of 20lbs. of lime to 2lbs. of salt and 10 gallons of water. Many growers leave out the salt and report results as good as with it.

Such a covering wash must fulfil four conditions :—

(1) It must have body enough to give a good covering coat.
(2) It must be so adhesive that it will not be washed off by rain.
(3) It should not flake off when dry.
(4) It must be moderate in cost.

If a fungicide can be combined with it, so much the better.

The results of lime washes as given by growers show some variance. Some have obtained a crop of apples where they never had one before owing to the attacks of apple psylla, and other growers declare they have had no benefit at all.

The action of lime washes is supposed to be mechanical rather than chemical, *i.e.*, its good effects are supposed to be due to the thick covering on the egg which prevents egress of the feeble larva rather than to chemical action on the egg itself. Growers, however, assert that they have seen young psyllas walking about with a lime coating on their backs, which makes it appear as if the action is not only mechanical. At present it is impossible to say with certainty to what the action is due. Last year at Long Ashton various washes were tried on a laboratory scale to test their covering and adhesive properties. Of these the most successful was a mixture of whiting and size ; but its costliness effectually bars it from use on a large scale. Other variants of lime wash, such as lime and tallow, and lime and water-glass, proved no more successful than lime alone. A certain amount of work was done with these lime variants on plantations in various counties ; but the unevenness of infection and different susceptibilities to attack of the few trees that could be sprayed made it difficult to get definite results.

Various other combinations of materials have been tried on a laboratory scale in 1913, and the more successful have been tried on trees in the Long Ashton plantations. Of these, two or three of the most successful may be tried on a commercial scale during the coming season at different county centres.

Summer Spray Fluids.—During the summer work has been started on contact washes. For killing by contact the first thing necessary is wetting power. This is largely dependent on a low surface tension. It is quite possible to prepare a thoroughly poisonous wash and yet in actual practice to find that its killing power is small. Many brands of nicotine show this phenomenon. They have very little wetting power and consequently small killing power. If 1 per cent. soft soap is added. their wetting power is greatly increased and they become exceedingly effective.

Proprietary washes often appear to lack wetting power, though this is of first importance for success. Many aphides are mealy and are scarcely wetted by ordinary water solutions. A low surface tension is also of advantage in causing drops to spread on a leaf, thus causing a more thorough wetness of the tree than could otherwise be obtained. Soft soap is the most useful common substance to lower surface tension. Waters of average hardness require 1 per cent. (1lb. in 10 gallons) to produce the required results. Harder waters would need slightly more.

The surface tension can be still further reduced by the use of paraffin. Paraffin when not properly emulsified in a soap solution is liable to cause burning, even when present in comparatively small quantities. When emulsified and not used stronger than 2 per cent., very little burning occurs. For an ordinary aphicide 1 per cent. of paraffin was found sufficient, while for penetrating the wax colonies of the Woolly Aphis 2 per cent. was required.

The method for making is as follows :—

Formula :

Soft soap 1 lb.
Paraffin 1 pint.
Water 10 gallons.

The soft soap is dissolved in a gallon of boiling water and the paraffin is then churned into the hot liquor by means of a garden syringe with a rose on it. The rose breaks up the paraffin into small drops which are then prevented by the soft soap solution from re-uniting, so that a perfect emulsion is formed.

The two important points are to use the soft soap solution when hot, and to spray the paraffin vigorously into the liquid. Simple stirring is ineffective and highly dangerous, as such a mixture will certainly cause bad burning.

When the paraffin is emulsified, the other 9 gallons of water are added, which gives the required 1 per cent. wash

INVESTIGATIONS ON THE CULTURE AND DISEASES OF FRUITS.

Big Bud Disease of Black Currants.—This disease has been known in this country for over half a century, but has only recently become serious. At first bad attacks were confined to the newer heavy bearing and comparatively sappy varieties, while the old established sorts which were more woody in growth and also less productive remained free. It is difficult to say what this was due to. From the fact that these old kinds are now as badly attacked as the new it would appear that the freedom of attack was due more to the older kinds being grown in comparatively isolated situations, such as cottage gardens, than to any real disease resisting quality of the plants themselves. At intervals so-called immune kinds, generally distinguished by their strong growth, have been introduced, only to fall victims to the disease after a short period of culture. Boskoop Giant is an example of these.

Now no variety can claim freedom from the disease, though the French varieties have proved themselves the best in this respect.

In general the green-budded varieties are more susceptible than the red. There appears to be no hope of obtaining a disease-proof variety till breeding work is undertaken on Mendelian principles.

The general facts of the life history are well known. The greater part of the year is spent by the mite in the closed buds of the currant and only a comparatively short period is spent away from protection, and therefore open to treatment by spray fluids. Young buds just formed may be infected with the mite as early as the middle of June, and it is possible and even probable that infection takes place earlier. At any rate mites may be discovered at that time in the newly formed buds, though it is only towards the end of the year that eggs are found in any abundance. The mites therefore in the winter appear to be safe from human attack, since no spray fluid which would not destroy the buds is likely to kill them. In spring, however, the " big " buds infected by the mite begin to open, and swarms of mites emigrate from the now dying bud. They may be found in greatest numbers just outside a big bud, but they are also present in quantity on the leaves and flowers. In this latter position, it is supposed, they meet with various flying insects visiting the flowers, and to the hairs of these insects they fasten themselves and so obtain a further distribution to other bushes.

At the same time they enter new hitherto uninfected buds of the same bush. This migration certainly continues for six or eight weeks and it is possible that it extends over a longer period.

There is reason to suppose that the life history is not yet completely known. If the only winter stage was that in the buds, it should be possible greatly to reduce the amount of disease in a plantation, if not to stamp it out, by cutting the bushes down to the ground and removing all buds except the minute dormant buds. This has been done by growers, but their general experience is that the disease is as bad next year. Of this there could be two explanations. The first assumes some other wintering place besides the inside of the bud. Two places suggest themselves, the ground and the bark of the bushes, which offers a good shelter in the natural cracks that occur there. No one has yet succeeded in finding mites or eggs in samples of soil, but this is hardly proof that they do not occur there, as it is a matter of extreme difficulty to find such small objects amongst the mass of small particles of a soil sample. They have been found on the bark at the base of bushes by Theobald, in autumn, and they may endure the winter in that position. A second explanation may be found in re-infection of the cut down bushes from untreated infected black currants in the vicinity. It is impossible to say how far infection may be carried. Infection often seems very irregular, bushes immediately surrounding an infected bush often remaining free while others more distant become infected. Re-infection, therefore, offers a possible explanation of the non-success of cut down bushes. The experiments on a small scale that have been started at Long Ashton seem to favour this explanation, as the most highly infected cut down bushes stand nearest the untreated material.

To combat the disease two general methods suggest themselves, viz., cultural and spraying.

Some growers have said that plantations could be kept comparatively clear if they were well manured. Manuring on a small scale has been adopted at Long Ashton; but neither a full artificial manure nor farmyard, appeared to influence the susceptibility to attack. Thinning the bush and tipping to induce the formation of short twigs were also tried, but without striking effect.

The second method, that of spraying, is what has hitherto been employed by growers, when any treatment at all has been tried.

Lime and sulphur dusted on to the bushes was suggested by Collinge and has been tried by various growers. The treatment necessitates three applications at about a fortnight apart during the migrating season, and aims at killing the mite when free from protection. The evidence as to its value seems conflicting. Some growers have declared it to be of no use, while others have ascribed the removal of the disease in their plantations to its effect.

There appears no doubt, however, that it shows a tendency to burn the flowers and young leaves, and it cannot be prescribed as a specific. It also shares the weakness of all spray fluids, including soft soap and quassia mixtures, that it is impossible economically to apply it sufficiently often. In other words, while the migration is constant the action of the wash is only intermittent. Pearson has advocated spraying with quassia and soft soap; but according to his directions it is necessary to spray six times the first year and four times the second. The difficulty of this method is not so much the amount of wash required as the necessity of employing a lot of labour at a time of the year when growers find greatest difficulty in getting labour. It would seem, therefore, desirable to find some wash that with one application would so cover the bushes with a sticky substance that all migrating mites would be caught and killed. The success of such a wash would depend on the hypothesis that all new bud infestation is caused by migrating mites. Attempts have been made at LongAshton to find such a wash, and one substance of some promise is already under trial.

A few bushes have been sprayed with a mixture of whiting and size with the idea of completely coating the big buds and thus preventing the egress of the mites. The attempt was unsuccessful, as the big buds swelled slightly and burst through their covering. It was interesting to notice, however, that the bushes sprayed with whiting and size showed a much sturdier growth, the leaves being not only slightly larger, but distinctly greener.

This effect will be further investigated this year.

Woolly Aphis.—Woolly Aphis or American Blight, is an old-established pest of the apple, but the amount of damage that it does depends on several factors. It is commonly present on old neglected apple trees, but it is most destructive on nursery stock. It attacks both stem and root, but it is on the former that its presence is most usually noted. In America it is the root form that does most damage, as its presence leads to various forms of root rot. This is not so common in England, but the colonies on the root serve as a breeding place from which in spring multitude of larvæ migrate up the stem. The root form, therefore, is of importance.

The nature of the soil appears to have considerable influence. Trees situated on medium or light lands often suffer severely, while those on heavy soils, like the lias clay at Evesham, are as a rule but lightly attacked.

The damage done is both direct and indirect. The punctures of the aphis induce excessive callus formation which not only deforms the tree and uses food materials uselessly, but which may serve as a harbouring place for other insects during the winter. But more important than the direct damage is the indirect. It is practially certain that spores of the canker fungus find their way into the tree *via* the puncture holes of the aphis. The insects have indeed been found with the fungus spores adhering to their bodies, and it is easily possible for the insect to introduce the fungus spore in the act of puncturing the tree.

As to treatment it is clear that if the root form is present it is useless to attack the stem form only, since there is a migration of larvæ from the roots to the stem in the summer. To obtain success, therefore, it is necessary to attack both.

The stem form does not present great difficulties, though certain conditions are necessary for its extermination. The insect is covered by an abundant waxy covering so that a colony appears like a mass of cotton wool. This covering is an exceedingly effective protection against all ordinary liquids as it is impossible to wet it, and therefore impossible to kill the insects. It is only liquids of low surface tension that can wet the waxy covering, and of such probably the most effective is a paraffin emulsion. For easy wetting, however, both soft soap and paraffin must be present at a strength of at least 2 per cent. (2lbs. per 10 gallons). With this strength comparatively little force is necessary to penetrate completely the colonies and to kill them. Weaker strengths require much more force to break up the colonies, and are very likely to leave behind some unkilled specimens.

The root form is far more difficult to kill. The only remedy so far is to inject carbon disulphide. This liquid is injected at a depth of 4 to 6 inches at different points around a tree so as to saturate the soil round the tree with the poisonous vapour. It has the disadvantage that it sometimes injures the tree and that its action is very irregular, as much seems to depend on the dampness of the soil. Formaldehyde was tried at Long Ashton for treatment of the root form ; but though the results were encouraging the substance proved too expensive for extensive use.

Trials of other substances are being arranged.

Strawberry Moth.—This pest first appeared at Long Ashton in the summer of 1912, when its greyish larva did considerable damage. It reappeared in 1913, but the damage was less severe. The larva is found in the opening flower bud, where it eats round the receptacle, damaging the stamens, and ruining the flower for subsequent fruit production. It is not *Peronea comariana* hitherto recorded on strawberries, but a species not before found attacking them.

The Apple Canker Fungus.—Some research has been attempted into the life history of the Apple Canker Fungus, *Nectria ditissima*, since this disease is of great economic importance to fruit growers.

The fungus enters the tree only through wounds in the stem and produces in time the characteristic cankered appearance of the branch. Wounds through which infection can take place must reach almost to the wood ; otherwise a bark layer is formed round the inoculated portion, which is thus excluded, and the tree heals itself of the attack. If, however, the wound is sufficiently deep to allow the fungus to reach the wood, then infection always takes place. Hence we find in nature that the wounds which permit of infection are chiefly those caused by frost and by the woolly aphis, in both these cases the wood becoming exposed.

The formation of a new bark layer at the limits of the infected portion of the cortical region, successfully confines the extent of the fungus in the cortex, hence the fungus lives in the wood rather than in the bark. Some attempt is made by the woody zone to prevent the spread of the fungus by the secretion of wound gum, thus blocking up the cavities through which the fungus travels, but since the wound gum can finally be penetrated the reaction is only partially successful.

The swelling which is frequently exhibited at a cankered spot is due to the rapid formation of an abnormal kind of wood, possibly to compensate for that portion of the wood which has been killed by the disease.

The question whether the fungus travels about the stem and causes the formation of cankers without external inoculation has not yet been satisfactorily decided; but usually the fungus is extremely local, and, at any rate, there is no foundation for the view that it lurks in apparently healthy tissue. It is quite safe to use shoots from any tree for grafting purposes provided that the cut surface of the stem appears quite healthy.

A New Bacterial Disease of Fruit Blossom.—During the spring of 1913 a serious attack of blackening of the pear blossom in the plantations at Long Ashton occurred. The discolouration was of the same general character as that commonly attributed to the action of frost and cold winds. Pure cultures of a bacillus were obtained from affected blossom, and inoculation experiments proved conclusively that the damage was caused by the organism. Specimens of similarly damaged blossoms were obtained from many other parts of the country, and the same bacillus was invariably found present. The disease is without doubt widespread, and, in the case of pears at least, a most serious one. The attacked blossoms wither and fall off, and the organism frequently attacks the fruit spurs also. In bad cases the growths of the spur shrivel and fall, and the base of the spur remains as a bare stump.

The organism penetrates downward into the tissues of the spur, remaining there, probably in a quiescent condition, until dormant buds develop in the following spring.

These are infected from the start, and doubtless serve to spread the disease. The organism is conveyed from flower to flower by bees, and the area of the attack is thus extended.

The same bacillus has been found on apple, plum, gooseberry and other fruit blossoms, causing in such cases attacks of varying degrees of severity: but pears appear to suffer worst. Certain varieties are much more susceptible than others. It has also been isolated from the soil of the plantations at Long Ashton.

Experiments as to the prevention and treatment of the disease are being carried out; but the prospect of success is not hopeful owing to the ability of the organism to live in the tissues of the fruit spurs and thus infect the blossoms in the earliest stage of their development.

Wind Scorch of Apple Foliage.—For several seasons the foliage of many of the varieties of apple trees at the Institute has suffered severely from scorching. The browned or scorched regions are mostly located along the margins of the leaves, although affected patches occur frequently also at any part of the leaf surface. A close microscopical examination of the affected areas has repeatedly been made to ascertain whether a parasitic fungus or other possible cause of the trouble was present. Although occasionally fungi have been found, especially in the later stages of the disease, no single form is invariably present; and there is little doubt that the scorching is due to a physiological cause and quite independent of the action of a parasite. The possibility of the damage being produced by the burning action of spray fluids was considered: but, since it frequently occurred as freely on unsprayed as on sprayed trees, it was obviously not a spray scorch. Nor did the general character of the affected areas correspond at all with the idea of a sun scald. The clue to the cause was obtained last June during a visit of inspection to the fruit plantations of Mr. J. M. Young, at Shippea Hill, West Suffolk. The disease was very marked on certain varieties there at that time, and Mr. Young suggested that the wind was responsible for the trouble by causing constant rubbing of adjacent leaves on each other. The movements of the foliage in the breeze were closely watched, and it became quickly evident that this suggestion was correct.

Since that time the behaviour of individual leaves on trees at the Institute has been observed, and the development of the scorching has been traced from the earliest stages. Taking a definite example, the history proceeds more or less on the following lines. Two leaves in quite an early stage of development are situated, may be on the same, or may be on adjacent, young shoots of the current season's growth, in such a way that the margin or the tip of the one rests lightly on some point of the surface of the other. Even a comparatively gentle breeze causes the rough edge of the former to oscillate constantly or intermittently against the latter. The oscillation evidently causes local irritation of the cells of both leaves at the points of contact, and abnormal changes resulting in an unhealthy condition of the cells ensue. The first outward sign of trouble is the development of a slightly purplish coloration at those points in the place of the normal healthy green colour, the appearance suggesting a slight bruise. Later the discoloured patches begin to turn brown, and eventually dry up and present the typical scorched character. By this time the growth of the shoots bearing the leave has probably extended to such a length that the one leaf has been carried entirely out of range of the other: and anyone observing them at this stage would have no suspicion that the scorched areas on the two were in any way related.

Naturally the habit of a variety will largely determine its susceptibility to this disease, the less rigid and more pendulous types clearly being likely to suffer most.

It is probable that a great deal of the scorching troubles on foliage following the application of spray fluids may be closely connected with wind scorch, since the early stages of the latter cause leaf injury not easily detected, and, as shown in our work on Bordeaux Mixture, spray scorching results very largely, if not entirely, from previous leaf injury.

The Influence of Grass upon the Growth of Orchard Trees.—In the Annual Reports for 1908, 1909 and 1911, reference has been made to experiments which have been in progress in the young cider orchard at the Institute to determine the value, if any, of the cultivation of a small circle around the base of each tree. Experiments at Woburn and elsewhere have already clearly demonstrated that grass has a prejudicial effect upon growth, and that, therefore, trees do better on cultivated than on grass land. Since, however, cider orchards are almost universally planted on grass, it was desired to ascertain if the removal of grass for a small area around each tree would suffice to lessen or prevent the injurious grass effect. In some cases the cultivated area extended for a radius of 4ft. 6in. around the tree, in others 3ft., and in the remainder the grass was allowed to grow to the base of the tree. In 1910 a limited number of the areas of 4ft. 6in. radius were extended to 6 feet.

The results of the experiments were quite definite up to 1910, six years after the planting of the trees, the larger the cultivated area the better being the growth. The gain by the trees in the cultivated areas was chiefly effected in the first three or four years after planting, and became less each year afterwards. It appeared, therefore, that the roots of the trees in the cultivated areas were beginning to extend beyond, and were thus beginning to feel the injurious grass effect. From 1910 to 1911 there was practically no gain, even in the special cases where the area was enlarged slightly in 1910. It was concluded at that stage that probably the limit of the beneficial effect of cultivation had been reached, and accordingly it was decided not to proceed further with cultivation but to allow the grass to grow up to the tree in all cases. The most recent measurements made in 1913 now show that in several cases there is a tendency for the trees which were grassed over from the start of the experiment to gain slightly on those originally kept in the cultivated areas: and the inference suggested is that the latter on being allowed to become grassed over are more susceptible and feel the injurious grass effect, for the time being at any rate, all the more because of their freedom from it for so many years. If that proves ultimately to be correct, it is an important point, since it raises the whole question as to the length of time for which cultivation is going to be really profitable.

These conclusions are drawn mainly from the results of six varieties of trees. Several other varieties have also been included in the experiments: and they bear out generally the results of the former. For various reasons, however, which have interfered with the grassing trials to some extent, the results given by them are not included in the following statistics. The table appended gives the average results for the trees of the six sorts referred to, the size of the tree at the start of the experiment as indicated by its girth at a height of 5ft. 6in. above the ground being taken as 100 and the later figures showing the proportionate girth at the times specified.

TREATMENT OF TREE	AVERAGE GIRTH				
	1906	1909	1910	1911	1913
Cultivated area 6ft. radius ..	100	—	—	273	324
Ditto 4ft. 6in. ..	100	199	242	277	326
Ditto 3ft.	100	180	219	255	303
Grass	100	166	196	232	284

Somewhat similar experiments are in progress in some of the demonstration orchards established in various parts of the West of England in conjunction with contributing County Councils.

Most striking results have been obtained in an orchard planted on Mr. G. E. Lloyd Baker's estate, at Hardwicke, near Gloucester, in December, 1908. The cultivated area in this case was restricted to a circle of 2ft. radius. The measurements of the girths of the stems taken 4 feet from the ground were in the spring of 1913 as follows :—

VARIETY	GIRTH OF STEM	
	Tree grassed over	Tree in cultivated area
Royal Wilding	3½ inches	5½ inches
Medaille d'Or	3½ ,,	5¼ ,,
Strawberry Norman	3¾ ,,	5 ,,
Kingston Black	3¼ ,,	5¼ ,,
Sweet Alford	4¼ ,,	6½ ,,

The results in these cases are most markedly favourable to cultivation; and the photographs, following page 144, of some of the trees show this very clearly, both as regards stem girth and also size of head. The staff shown in the photographs as a guide was four inches in girth. Mr. G. H. Hollingworth, F.R.H.S., Horticultural Instructor for Gloucestershire, has most kindly allowed the use of the photographs, and has furnished the particulars given. He has had the experiments in that county under his charge from the start.

None of the results at Long Ashton approached these as regards the extent of the difference between the grassed and ungrassed trees; and, indeed, the amount there fell considerably below expectations based on the Woburn experiments. The cause is not clear. Possibly the fact that at Long Ashton all the trees were cultivated for two years after planting before the experiments were started may have had something to do with it by giving the trees grassed in 1906 a good start before the grass influence was brought into play. Certainly it is not due to specially favourable soil at Long Ashton, since Mr. Spencer Pickering has compared this with some of the Woburn soil in pot experiments and finds that it permits the injurious grass influence as badly as the latter.

ADVISORY WORK.

Reference was made in the Report of last year to the scheme organised by the Board of Agriculture and Fisheries for the provision of technical advice and assistance to farmers, in connection with the various local problems in agriculture with which they have to contend: and it was stated that this Department had been appointed to serve under the scheme for the Counties of Gloucester, Hereford, Somerset, Wiltshire and Worcester. During the past year the scheme has been in operation and many enquiries have been received. There appears to have been some doubt among several of those wishing to avail themselves of the facilities offered, as to the procedure necessary to obtain assistance. On that account it may be pointed out here that the correct course in the first instance is to communicate with the Director of Agricultural Education for the County in which the applicant resides. If the matter is one that can suitably be dealt with by the Staff of the County Agricultural Education Department, the latter will take action directly: but if the question is one requiring reference to the Advisory Centre, it will be forwarded there for further treatment.

It may be of interest to indicate briefly the kind of work which has arisen during the past year; and the following summary will suffice to show the varied nature of the enquiries, some of which could be dealt with without experiment, while others required further examination, and in some cases are still under investigation.

The Analysis of Soils.—In the course of the year enquiries concerning soil problems have been received from the following localities:—Crowcombe, Wincanton, Long Ashton, Clutton, Ham Green, Brislington, Cheddar (Somerset), Redfield, Staple Hill, Fishponds, Clifton, Bradley Court (Gloucester), and Great Chalfield (Wilts). For the most part, these have been requests for advice as to the best system of manuring or as to the best method for removing some defect in the soil. Such questions as these invariably involve the analysis—partial or complete—of one or more samples of soil; and, instead of enumerating the enquiries in detail, it is proposed here to discuss more generally the practical value of soil analysis to the agriculturist and horticulturist, and to indicate some of the considerations which the analyst has to take into account in reporting on his results.

In the first place the fact has to be accepted that, owing partly to the still incomplete state of our knowledge of soils and partly to the lack of delicate analytical methods, we can only make practical use of the results of soil analysis within certain definite limits. Moreover, the problem submitted by the farmer is by no means so simple as it appears; and if information of real practical value is to be given, the investigation cannot be confined to straightforward analysis. Such factors as the rainfall, the situation, and the prevailing climate, will all affect the interpretation to be placed on the results. When, however, these points are borne in mind, much information of the greatest importance and value is to be obtained from the analysis of soils.

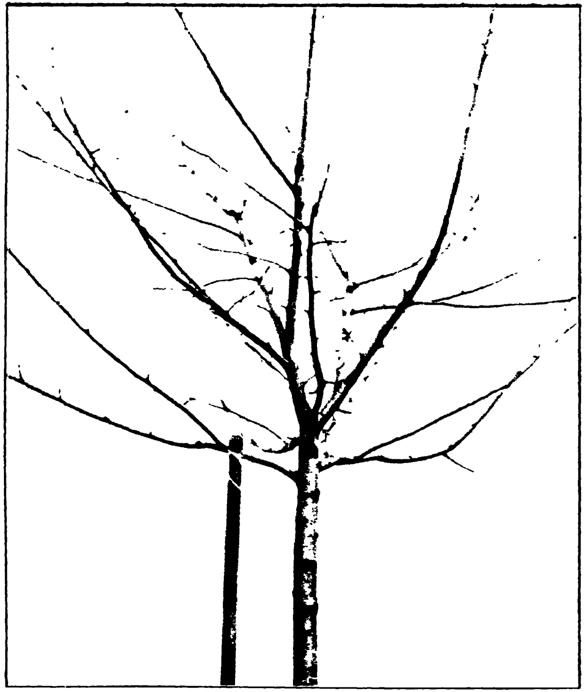
Of all the soil constituents, that which needs to be determined most frequently is carbonate of lime. The amount of this substance present varies enormously in different soils—from 40 to 50 per cent. in some chalk soils down to scarcely detectable amounts in some sands and peaty soils; and no hard-and-fast rule can be given as to the percentage needful in each case. The presence of a sufficient quantity is, however, essential to fertility, for it is chiefly the action of lime, as a base, which maintains the neutrality of the soil. There are processes going forward in all soils causing the production of acid, and unless this acid is neutralised the soil will quickly become unproductive. Moreover, lime has an important physical effect in making heavy soils more open and easier to work; it also helps to bring the reserves of plant food material into a condition in which the crop can make use of them. For these and other reasons, a knowledge of the percentage of lime in his soil is of the greatest importance to the farmer, and fortunately very good methods are available for its determination. A great number of cases of poor pasture and unproductive arable land are due to nothing more obscure than a lack of lime.

Besides a sufficiency of lime, a fertile soil must provide a number of substances which the plant requires as food. Among these, only the nitrogen, phosphoric acid and potash need concern us, since almost all soils contain enough of the other plant foods. It is a comparatively easy matter, by chemical analysis, to determine the amount of these three substances present in any soil, but it often happens that the total amount of plant food thus determined is found to bear no relation whatever to the fertility of the soil. Any ordinary crop indeed utilises only a very small percentage of the total plant food present and the poorest soil usually contains enough for many crops. Evidently, therefore, only some part of the food material present at any time is in such a condition that plants can make use of it, and it becomes necessary to attempt to distinguish between the "total" plant food and that proportion of it which is "available." This can only be done by empirical methods which though giving results valuable in many cases still leave a good deal to be desired. The chemical analysis of soils is, indeed, of practical value in all ordinary cases only when the general composition of the type of soil to which the sample belongs is known. It does not help very much in the classification and grouping of soils.

The supply of food to the plant is, however, only one of the factors which goes to make up the fertility of the soil. The physical properties (texture) are often of greater importance, for these not only determine whether a soil is easy or difficult to work, but also whether it will supply the crop with sufficient water in a time of drought, and whether it will get rid of surplus water in a time of heavy rainfall. Now these properties depend on the proportions in which the various sizes of particles composing the soil are mixed, and on the extent to which the finer grades are aggregated into compound particles. Those soils in which the finest particles predominate are clays, soils with much coarse material are sands, whilst intermediate types are loams. By means of what is known as mechanical analysis the proportions of the various grades of particles can be estimated, and if to this is added a determination of the percentage of carbonate of lime and of organic matter (since these two soil constituents have a most important influence on the extent to which compound particles are formed) a very good picture of the physical structure of the soil is obtained.

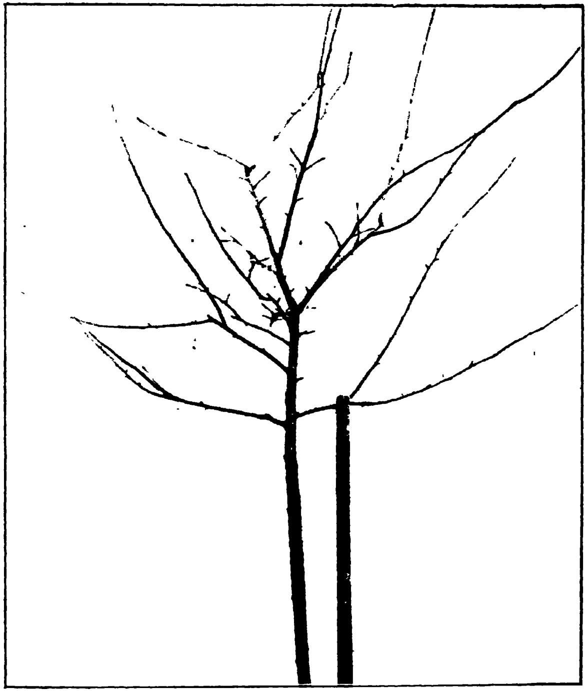
It is found that over very large areas of country the type of soil is determined by the nature of the underlying rock (from which it has been formed by weathering) even though the local variations may be considerable. Where, however, large disturbances have taken place, such as the occurrence of a glacial period, this no longer holds, the original surface often having been washed away or concealed by a deposit of drift. Even on one geological formation, the lithological characters may vary considerably in passing along the formation, in which case the derived soils will vary correspondingly. Nevertheless, on the whole it may be said that each type of soil shows a fairly constant texture and composition within its own area, the boundaries of which may be approximately defined; and the geological formations can be used as the basis for the study of soils, so long as account is taken of the presence of drift deposits, etc.

The chief value of mechanical analysis lies, then, in the means which it gives of grouping soils into certain definite types, and of correlating the properties of the various types with the methods of farming to which they are found to be most suited. It is therefore evident that in order to be able to interpret the results of analysis of any given soil to the best advantage a knowledge of the composition and properties of the type to which it belongs is needed. Hence the paramount importance of systematic soil surveys which aim at defining the distribution of soil types and which, while providing material for comparison with the results of isolated analyses, also help to indicate the characteristics which determine the suitability of soils for particular crops. When the average



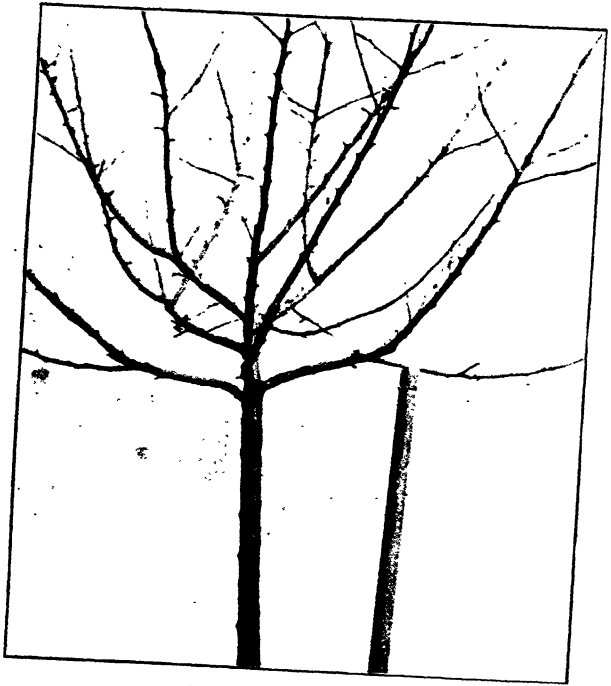
SWEET ALFORD.

Cultivated round. Girth of stem, 6½ inches.



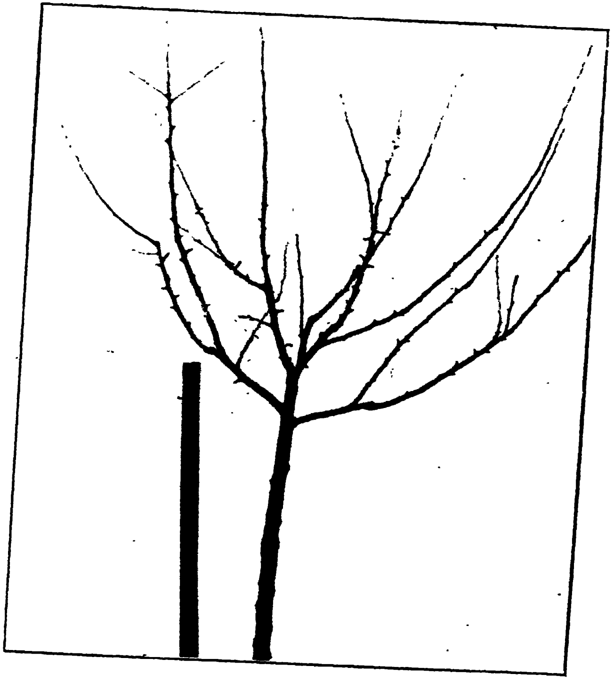
SWEET ALFORD.

Grassed over. Girth of stem, 4¼ inches.



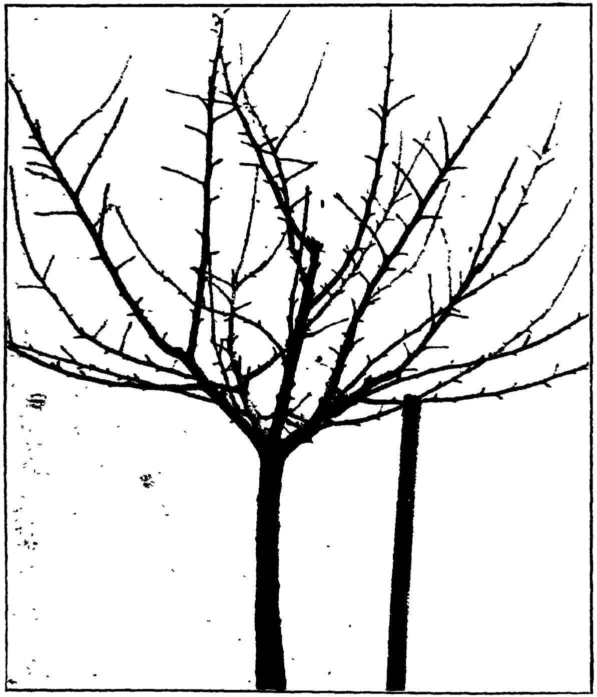
Kingston Black.

Cultivated round. Girth of stem, 5¼ inches.



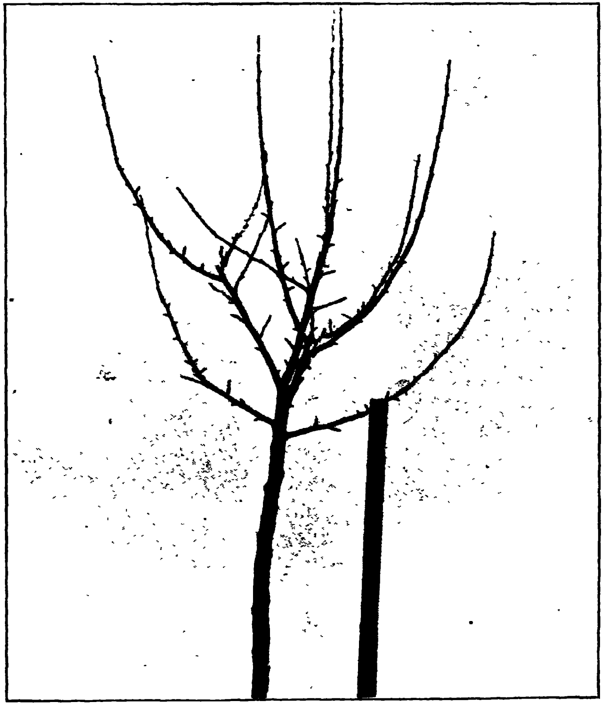
Kingston Black.

Grassed over. Girth of stem, 3¼ inches.



ROYAL WILDING.

Cultivated round. Girth of stem, $5\frac{1}{2}$ inches.



ROYAL WILDING.

Grassed over. Girth of stem, $3\frac{1}{2}$ inches.

composition of the type to which a sample belongs is known, it is possible from the results of analysis to ascertain whether it is in any way abnormal and whether any observed defects are inherent in the soil or are due to the methods of farming. Further, the best crops to grow, and the best system of manuring, may be indicated with some approach to accuracy. It is important to remember, however, that the results of mechanical analysis have always to be considered with reference to the amount of organic matter and of carbonate of lime present; and, also, with reference to the rainfall of the district, the nature of the subsoil and the situation, especially as it affects the supply of underground water.

The discussion of an actual example will, perhaps, make these points clearer.

UNIVERSITY OF BRISTOL RESEARCH STATION SOILS.

	1 Pasture	2 Pasture.	3 Arable	4 Arable	5 Arable
MECHANICAL ANALYSIS	%	%	%	%	%
Surface Soil.					
Fine Gravel	0·73	0·70	0·82	0·94	1·04
Coarse Sand	19·36	10·85	10·55	9·61	11·04
Fine Sand	35·16	42·55	40·86	34·96	38·51
Silt	11·46	14·00	13·18	14·34	13·52
Fine Silt	16·50	15·20	18·82	21·21	18·46
Clay	5·10	6·67	7·16	10·16	9·25
Subsoil.					
Fine Gravel	1·00	1·05			0·25
Coarse Sand ..	17·21	11·87			6·46
Fine Sand	39·44	45·18			31·84
Silt	11·97	16·75			13·35
Fine Silt	15·42	10·65			22·21
Clay	9·75	9·61			18·02
CHEMICAL ANALYSIS.					
Surface Soil.					
Moisture	2·4	2·4	1·83	2·48	1·92
Organic Matter ..	8·18	7·31	5·53	5·61	5·35
Carbonate of Lime ..	0·43	0·02	0·07	0·35	0·22
Phosphoric Acid (total)			0·15		0·12
Ditto ditto (available)			0·026		0·024
Potash (total) ..			0·82		0·75
Ditto (available)			0·034		0·033
Subsoil.					
Moisture	1·44	1·40			2·02
Organic Matter ..	3·25	2·60			3·07
Carbonate of Lime ..	0·22	0·26			1·23

In the accompanying Table will be found the analyses of some of the soils of the University Research Station at Long Ashton. These are situated on and derived from the New Red Sandstone formation (Keuper Marl). A glance at the mechanical analyses* of the surface soils shows at once that all belong to the same type characterised by a high proportion of "fine sand" and a high ratio of "fine silt" to "clay." There are certain minor differences, but these are not of importance for our present purpose.

A small number of analyses such as these do not, of course, by any means define a soil type; but if we accept these for illustration, as typical of an area of Keuper Marl soils, we will suppose that a sample of soil belonging to this group, and taken from a field which does not produce average crops, has been sent for analysis. If the soil and subsoil of the field prove to be in all respects normal and precisely like the type, it becomes necessary to look elsewhere than to the mechanical and chemical composition for an explanation of the unusually low fertility. The rainfall may have an influence. A very high rainfall brings into special prominence the "clayey" properties of the finer grades of particles, and the soil will behave like a much heavier soil under lower rainfall. Special attention would then have to be given to drainage and the rapid removal of surplus water. On the other hand the situation may be such that the supply of underground water is insufficient and the rainfall low. The most important property of the soil will then be its power of lifting the subsoil water, and something can, perhaps, be done by special methods of cultivation to increase the power of the soil in this respect and to conserve the surface water. The nature of the subsoil will also influence the supply of water to the crop and may be the cause of under or over drainage. An injudicious system of manuring, or other mistakes in management or cultivation, may also account for lowered fertility.

The analysis may, on the other hand, indicate a deviation from the type in some particular; and it may or may not be possible to correct this. The amount of potash, perhaps, may be below the average, and, although the quantity present would be amply sufficient in another kind of soil, yet by comparison with the typical samples the inference can be drawn that potash manuring will probably be valuable. Again, a lack of carbonate of lime may be responsible for many defects. Finally, should there be a marked variation from the type in the mechanical composition of the sample, it may be possible in some cases to get better results by a change in the system of cropping.

---

* The terms Fine Gravel, Coarse Sand, etc., indicate separate fractions of the soil, each composed of particles falling within certain arbitrarily chosen limits of size, "fine gravel" being the coarsest and "clay" the finest.

In some such ways as these the information given by the results of soil analyses may be of considerable practical value; and the further the work of soil surveys is carried, the more detailed and the more valuable will the available information become.

The Action of various Lime Washes as Winter Sprays for Fruit Trees.—This work was undertaken at the request of certain of the Instructors in Horticulture of the Counties included in the Bristol Province, who reported considerable discrepancy in the results of local demonstrations with these spray fluids as given by them in previous years.

Comparative trials of various types of these washes were carried out at two centres in each of the following Counties :—Gloucester, Hereford, Somerset and Wiltshire, and three centres in Devon. The latter county, although outside the Bristol province, was included in the scheme on account of its association with the Institute. The trials were made under the personal direction and supervision of the Adviser in Plant Pathology, the local arrangements being made by the Instructors in Horticulture for the counties concerned. At the same time duplicate trials were conducted at Long Ashton. The Adviser has since visited as required all the orchards and plantations included in the scheme to make the necessary observations as to the results of the tests. These experiments need extension under somewhat different conditions next season before satisfactory conclusions can be drawn.

The Flesh-Colour of Rhode Island Red Fowls.—This investigation was undertaken at the request of the Board of Agriculture and Fisheries. It was alleged that the flesh-colour of this breed, which is normally yellow, invariably came white in the case of birds reared at one of the poultry farms in Gloucestershire, while, when eggs obtained from that place were hatched elsewhere, the flesh of the birds reverted to the normal yellow tint. The market value of the white-fleshed birds is stated to be considerably higher than that of the yellow-fleshed type, and information as to the cause of the change in flesh-colour was therefore sought. After verification, in the main, of the alleged facts, experiments were begun at Long Ashton, and for a short time also at the farm in question. The tenant, however, left the latter last May, and since that time the work has been confined to Long Ashton, which has hampered considerably the investigation in the direction as to the effect of local conditions. Several interesting facts have already been brought to light. Experiments are still in progress, the results of which are not yet available.

Teart Land Investigations.—This work, which was originally begun at the University on behalf of the Somerset County Council and aided by grants from that body, is now being carried on under the Advisory Scheme by Mr. Gimingham. In the latter's opinion further progress cannot satisfactorily be made with the laboratory side of the investigation until practical experiments are carried on concurrently on affected land. He has for some time endeavoured to obtain the use of a suitable piece of land for the purpose and has visited several districts with that object. So far, however, all the plots visited have proved to be either not available, or, if available, not sufficiently affected to be suitable for experimental work. A post-mortem examination of a scouring animal has been made in conjunction with a protozoologist and a veterinary surgeon; and several soil samples from affected areas have been examined and analysed. Correspondence with the Agricultural Instructors for Derbyshire, Nottinghamshire and Warwickshire, has taken place with regard to alleged occurrences of scouring land in those counties, and arising therefrom, a number of farms in the latter county have been visited. It is interesting to find that scouring does take place there on the same formation as that on which the trouble occurs in Somerset; and comparative examinations of the soils give results tending to confirm the view that the special physical structure of the surface soil is, in the first place, responsible for the production of scouring herbage.

Eelworm Disease of Strawberries.—Strawberry growers in the Cheddar district of Somerset have reported a serious outbreak of disease in their plantations, which has been found to be caused by eelworms. During the past summer experiments for remedial treatment have been carried on, and these are still in progress.

Diseases of Plants.—Several cases of diseased plants have been submitted for examination, and as far as possible advice for treatment has been given. Among them may be mentioned leaf-curl of Almond and Peach foliage caused by ***Exoascus deformans***, the dying back of spurs of apple trees and the shoots of Plum trees due to ***Sclerotinia fructigena***, the dying off of Plum trees due to ***Eutypella prunastri*** and ***Stereum purpureum***, blindness of strawberry blossom resulting from the decay of the stamens attacked by ***Botrytis sp.***, the dying off of Cherry trees caused by ***Armillaria mellea***, and the damping off of Tomato plants due in part to ***Pythium de Baryanum*** and in part to a cause not yet ascertained. A case of chlorosis of Potato foliage was sent in, and this is still under investigation, as is the case also with an outbreak of Clover Sickness. Several instances of damage caused by insect pests were also referred including a disease of Celery Stems due to the Celery Stem Fly, and the dying back of a hedge of Thuja macrocarpa, caused by an attack of *Lachinella thuja*. It is believed that this is the first reported occurrence of this insect in Britain.

Miscellaneous.—Among questions of a miscellaneous character may be mentioned the poisoning of cattle due to eating foliage of a species of Thuja ; the relation of the occurrence of Spiney Rest-Harrow in pastures to the lime content of the soil ; kainite and lime treatment for parasitic worms in pasture land ; an analytical examination of glove clippings, with a view to their value for agricultural purposes ; and the decay of Algae in reservoirs.

XVI.—REPORT OF THE CONSULTING CHEMIST.

(*Dr. J. A. Voelcker, M.A., F.I.C., etc.*).

There were only three samples sent for analysis in the course of 1913, and there was one matter of consultation. In connection with the Society's Show at Truro 26 samples of milk were analysed. The three samples sent were :—(1) Water ; (2) Calf-meal ; (3) Refuse from wool-cleaning.

(1) WATER.

The sample gave 31·08 grains per gallon of total solids, these consisting mainly of lime and magnesia salts, and the water was, in consequence, a somewhat hard one. It was organically very fairly pure, but a rather high amount of nitrates present indicated the probability of some inflow of land drainage water.

(2) CALF MEAL.

This sample was sent because of losses having been experienced in calf-rearing. The meal was found to consist mainly of linseed meal and bean or pea meal. It was clean and free from admixture of weed seeds. No injurious seeds or other harmful matters were found in it, but the analysis showed the sample to have 24¼ per cent. of albuminoids, which is certainly a high proportion of nitrogenous matters to give to young calves. The food, in my opinion, was of too " strong " a nature for a suitable calf-meal.

(3) REFUSE FROM WOOL CLEANING.

A sample of this material was sent me. Its cost, by the time it was got on the land, was £2 per ton. The analysis was :—

Moisture	3.79
Organic Matter	21.99
Lime	3.68
*Phosphoric Acid	.42
Alkalies, etc.	9.22
Sand	60.90
	100.00
*Equal to Phosphate of Lime	.92
Nitrogen	1.20
Equal to Ammonia	1.46

This, it will be seen, was a very poor material and not nearly worth what it cost; fifteen shillings a ton would be more like its true value.

(4) CONSULTATION.

The one matter of consultation referred to the improvement of grass by the use of bone-dust.

The Note-Book.

——:o:——

Diseases Affecting Lambs and Young Sheep.—Professor Penberthy in a paper read to the International Conference of Sheep Breeders on the above subject, said: The economic loss to the stockowner, the consumer and the national resources, attributable to disease in our flocks, is great, though in the absence of reliable statistics it is not possible to compute even approximately its amount, hence the consideration of measures for diminishing it is worthy all the attention we can bestow thereon. Our knowledge of the nature of some of the more destructive ailments of sheep and of successful means of dealing with them is far from complete, and many important problems in relation thereto await solution.

The magnitude of the subject compels me to deal mainly in principles rather than details, while some of the diseases with which you are familiar and most interested in may not be referred to.

Though disease among sheep in this country is responsible for serious loss, and occasionally very severely affects some flocks and their owners, our bill of health in this respect compares favourably with that of any other country in the world, particularly in respect to our high-class pure-bred flocks. There exist no data from which a reliable opinion can be formed as to whether diseases of sheep are more or less prevalent now than formerly. At any rate, we may congratulate ourselves on our freedom from such serious contagious affections as sheep-pox and foot-and-mouth disease. If such diseases appear in our flocks their germs must be imported from abroad, though not by affected sheep, and should such an accident happen the measures adopted by the authorities may be relied on to immediately suppress it. Though the operation of the Orders of the Board of Agriculture is accompanied by conditions more or less irksome to agriculturists in the immediate neighbourhood of an outbreak, the experience of recent years has proved that foot-and-mouth disease is so far under control in this country that the risk of moving sheep outside an infected area is scarcely greater than when the whole country is free. Considering that 27,000,000 sheep exist in the small space of this country, it is certainly very remarkable that in the eighty outbreaks, which have occurred in Great Britain during the past twenty years, the average number of sheep affected was only about thirty. I think agriculturists must realise that in this respect the Board not only deserve their confidence, but also their gratitude.

My personal experience indicates to me that some other diseases of sheep and lambs, due to contagion, but only occurring sporadically, such as navel or joint-ill and parturition fever, are much less frequently encountered since their dependence on contagion has been recognised. On the other hand, we hear of diseases under new designations, such as "Johne's disease," "Septicæmia hæmorrhagica," etc., which, in many cases at least, are merely old acquaintances with new names.

Though domestication has undoubtedly had the effect of rendering sheep liable to disease in serious form, their continuous outdoor life has preserved the species from some of the dangerous maladies to which other live-stock have been rendered liable as a consequence of spending a considerable portion of their existence indoors. Thus tuberculosis is so rarely contracted under their ordinary conditions of life as to be practically negligible. Of 10,000,000 sheep slaughtered in the United States in 1908, only 40 were reported as showing signs of being tuberculous on post-mortem examination.

In its natural state the sheep is an inhabitant of the high lands and dry lands, and under the conditions obtaining there the species has survived. In these situations suitable herbage is often scanty and animals are forced to range over large areas to obtain subsistence. At least for the greater part of their lives they have "to work hard for their living," and there is no fear of their being pampered or "too thick on the ground." As in domestication sheep are brought under converse conditions, so they appear to become liable to disease. Though occasionally considerable losses are experienced as a result of disease in sheep kept mostly on high ground with bare subsistence and ample space to move about in, yet such is the exception rather than the rule, and if the origin of such occurrences could be traced, it would probably be found that at some period of their lives the subjects of the disease had been exposed to the risk of infection or infestation created by artificial conditions. Sheep placed under other conditions than those referred to as natural will not necessarily become the subjects of disease. But under domestication the risks of infection and infestation are increased in degree somewhat proportionate to the extent of the violation of the laws of nature. Yet nothing is more evident than the predominating degree of freedom from disease of the flocks in this country, and particularly those of pure-breed, in maintaining which in their high state of physical excellence and health some amount of artifice has been called into operation. As artificial conditions have supplanted natural conditions, and thereby increased the risks of disease, so artifice must be called on to avert these dangers.

Unfortunately, it is a too common experience for disease to appear in the same situation season after season, and sometimes, as it were, in cycles. One is accustomed to hear such expressions as "sheep-sick," "soiled," "tainted," etc., applied to farms or fields used to convey the idea that they are unfit or unsafe to keep sheep on. In such situations these animals do not thrive well. This condition more commonly obtains where large numbers of sheep have been more or less continuously kept for long periods on relatively small areas. It is sometimes believed that this unhealthiness of pasture and unthriftiness and disease of animals kept on them are in some way due to deficiency in quality of the herbage induced by continuous feeding off by animals of the same species, and thus rendered incapable of sustaining others in a healthy state. But we are not aware that the composition of edible herbage can be so altered by any manner of treatment as to render it, of itself, capable of inducing the diseases commonly met with on sheep-sick lands. The sickness, tainting or soiling of land referred to, is usually, if not exclusively, due to its contamination by living germs which have emanated from sheep or other animals. These may be vegetable organisms as bacteria, or eggs and embryos, of worms, parasitic to sheep. In my experience "sheep-sick" land has most often been met with under conditions known to be favourable to the existence and increase of parasitic worms, and serious occurrences of disease of sheep in such situations have been most frequently found due to the attack of parasitic worms. All the more common diseases of sheep, particularly of young sheep, are of this character, and I propose to refer more particularly to internal parasites and their effects.

Disease-producing parasitic worms, though varying materially in size and other characteristics, are all highly organised animals, each owing its existence to a pre-existing worm of the same kind, while each variety has its own particular life history, and for its development and existence requires certain definite conditions. The natural home of the mature parasites is within animals, which under certain circumstances become deleteriously affected as a result of harbouring them. A period of residence within the animal, which is its natural host, is absolutely essential to the completion of the life cycle of the worm parasitic to that particular species. In fact, this residence in the animal is so far obligatory that if a certain species of animal became extinct, the parasitic worms peculiar to that species would also cease to exist. The length of the period during which parasitic worms may live within the sheep has not been definitely ascertained, but such experimental evidence as we possess supports the view that it may extend to several months. Within the animal, maturity is reached and reproduction takes place. If there be a passage from the part of the body in which the worm discharges its eggs or embryos to the outer world these are cast out, with the fœces, from those whose natural home is in the digestive tract, and either through the nostrils, or mouth in the act of coughing, from those which reside in the lungs. Neither the eggs nor the immature progeny of the more dangerous parasites of the stomach and intestine can develop in the animal to the stage at which they injure the host. This development has to take place in the outer world after they have passed out from the sheep.

Many apparently healthy sheep harbour a few parasites, often of several kinds, without sustaining appreciable injury or discomfort; indeed, if after death a careful search be made, such parasites may be found in a large proportion of the animals examined. It is by such unsuspected animals that parasitic worm diseases are maintained and the seeds taken from place to-place. The number of the progeny of a single worm is prodigious, and we may, I think, take it for granted that eggs or immature worms are discharged on to a large proportion of our sheep-feeding grounds. From animals appreciably affected they pass out in greater profusion, but many of these succumb to the disease and so cease to be distributors.

The fate of the eggs and young worms, however, entirely depends on conditions obtaining in the situation in which they are deposited. The vast majority perish.

We are not yet in possession of all the facts connected with the development of every dangerous parasitic worm, but the outcome of the experimental work done supports the generally accepted view that moisture and a certain degree of heat are absolutely necessary in the early phases of life, and that if these do not exist, the eggs and the young worms die. But sheep discharging worm eggs or embryos, warm wet weather, and circumstances which tend to the accumulation of surface water, all favour the occurrence of parasitic worm disease. Thus such diseases are more prevalent after the external conditions referred to have obtained, but fortunately even during wet warm seasons the great majority of our flocks escape serious attacks. This circumstance is due either to the fact that parasite eggs have not been discharged in numbers sufficiently large to pollute the situation seriously, or that sheep have not had access to contaminated feeding grounds for periods long enough to acquire the number necessary to induce disease, or to the fact that after being hatched the young parasite must pass a phase of its existence in some small animal, its "intermediary host," before it becomes capable of living and producing disease in its ultimate host—the sheep.

Experiment has failed to determine the definite period during which parasitic eggs and embryos may live and retain the power of infesting sheep after being discharged. Such results as have been obtained indicate that this is not indefinite, and we venture to express the opinion that a contaminated pasture would be free from danger if susceptible animals were excluded from it for twelve months.

Adult sheep appear to enjoy a degree of tolerance, or power of resisting the attack of parasitic worms, which is not possessed by lambs and young sheep. This immunity has, however, its limits, and we know of no worm disease fatal to the latter which, given a sufficiently large number of attacking worms, may not prove fatal to adult sheep. The majority of parasitic worms do not bring forth in their hosts progeny which are capable of inducing the disease caused by the parent worm until after they have passed on to the land (or water), and gone through further phases of development. In this there is a striking contrast between the parasitic worms and the microscopic organisms, or bacteria, responsible for the so-called contagious diseases. These organisms multiply within the animal with stupendous rapidity and the successive generations attack their hosts in the same deleterious way as their predecessors. But the effect of injurious worms will largely, if not wholly, depend on the number which enter the animal, and possibly to some extent on the conditions found there. It is, however, possible for successive infestations to occur and a sheep may take in the worm developed from the eggs which it had previously discharged. The thicker sheep are on the ground, the greater will be the chance of their picking up large numbers of young worms and of becoming infested in a dangerous degree. Lambs and young sheep being seriously affected by a smaller number than adults, we more commonly find the worst manifestation in the former. I need not dwell on the dangers of overstocking or the desirability of allowing lambs and young sheep "to have the first bite," *i.e.*, to go on to the feeding grounds before and not after adult sheep.

One of the greatest difficulties with outbreaks of parasitic worm disease in sheep is that often before the first manifestation of illness, a large proportion of the flock has become infested.

In attempting to determine the origin of the worms or the situation in which sheep or lambs have become infested, it must be borne in mind that symptoms are not usually manifested until some time after the parasites enter the animal. Thus the germs may be acquired in one place and the disease manifest itself in another.

Though lambs may become infested by young worms which have adhered to the udder or fleece of the ewes, it is probable that parasites are mostly acquired at pasture. In some instances it may be possible to form a fairly reliable idea as to the contaminated situation, but often it is not possible.

Of measures for diminishing our risks by providing conditions which are unfavourable to the life of worms outside the sheep, we may suggest drainage or other means directed to prevent the accumulation of surface water, the cleansing out or fencing off of dirty pools, and the provision of running water for drinking purposes. But the conditions under which these worm diseases occur are largely affected by season as well as situation, and our best endeavours are liable to be rendered ineffectual by natural circumstances over which we have no control. Still the adoption of preventive measures may be of very great value, but the value of preventive measures lies mainly in their systematic and constant application.

It is to be feared there are few flocks without some apparently healthy sheep harbouring parasites, which under some circumstances may become sufficiently numerous to induce disease and even serious outbreaks in others. Common observation, exercised before the existence of worms as a cause of sickness and death was realised, impressed on our forefathers the desirability of keeping sheep as far as practicable on high, dry, ground with plenty of grazing space or frequent change. In the literature of seventy years ago mention of parasitic worms as the causes of disease of sheep is conspicuous by its absence, though the descriptions of the diseases then prevalent leave no room for doubting that, though unrecognised, worms were then in operation with baneful effect. Whether these diseases are more common at the present time as a result of the changes in the practice of husbandry, and the altered relative proportions of arable and pasture land, we have no means of judging, though the ploughing and cultivation of land must be less favourable to the existence of worms than prolonging the life of pasture and neglecting it.

It has to be confessed that even now the curative measures at our disposal cannot, in most forms of severe worm disease, be relied on to mitigate the losses materially. If most medicines, now credited with curative powers, were administered in doses strong enough to destroy the worms, the sheep would be the first to die from their effects. Medicine is of service. For the expulsion of tapeworms and others, some appropriately selected drugs can be relied on, and in cases of less serious infection experience indicates what drugs have a beneficial effect. Medicinal treatment is probably more advantageously adopted as preventive than curative. When it is discovered that parasitic disease is existing in a flock, it is the apparently healthy animal which, for the reasons previously given, would probably be benefitted by drugs.

The purification of land, which has been contaminated by the discharges of sheep infested with worms, is perhaps most certainly effected by ploughing, and it would appear to be a good practice to place sheep suspected of passing worms on to land which will be ploughed before sheep are again placed on it, at the same time supplying them with salt, iron, and bitter vegetables in the troughs—a practice particularly advisable in the late spring and early summer. It is probable that serious infestation often takes place at this season of the year, the symptoms showing themselves later on in the autumn and through the early winter.

The longer sheep are kept off infested land the safer it becomes, and advantage may be taken of this in attempting to purify it. This, however, is only in the case of worms which are not parasitic to animals of other species, unless these also are excluded.

Sheep attacked with internal worms are in conflict with their enemies, and in order to place the sheep at the best advantage, liberal feeding, shelter, and the avoidance of all debilitating conditions call for attention.

Sheep, even in an apparently healthy state, may harbour parasites of quite distinct species, some minute, almost microscopic, which only an expert is likely to observe, and others inches long and easily discernible. A few worms in the stomach, intestines, or lungs is no proof that disease is caused by them. Up to recent years the smallest and most destructive worms were quite overlooked, and disease caused by them was often attributed to larger worms. The condition now recognised as Johne's disease has sometimes been attributed to small worms because a few specimens have been found at post mortem examinations.

The *parasitic lamb disease* of a serious nature most commonly encountered in Great Britain, which has in some seasons and particular parts of the country appeared as a veritable scourge; is often the combined result of infestation with worms of different varieties and species, though usually those of one or other variety predominate. The changes brought about by those of each kind vary in intensity and prominence, according to their number and capacity for injuring their hosts. Very minute worms residing in the fourth stomach and intestines are probably the more common and destructive in the case of lambs, and these are often accompanied by larger worms, which add to the injury and hasten what frequently proves a fatal termination. The symptoms resulting from an attack of these worms are scouring, debility, rapid loss of flesh, thirst, loss of appetite for food, a disposition to lick sand and grit, and a high temperature. The fatalities are sometimes very heavy.

In cases in which worms in the bronchial tubes are exerting the greater influence, the manifestations are those known as "husk," "hoose," etc. Another parasitic worm, whose natural habitat is in the lungs, is not so generally recognised as a cause of serious disease to lambs, though during the past year it has proved to be the active factor in destroying many young sheep. One of its manifestations is seen in the lungs after death, in the form of more or less numerous small shot-like nodules, hard to the touch and so much like true tubercles that at different times carcases of sheep in which they have been discovered have been condemned as tuberculous. In this phase of existence these worms do not appear to injure their host seriously. But if the worm produces embryos in the lungs and these wander through the lung tissue, they produce changes which give rise to symptoms of disturbed breathing, etc., and often end fatally.

Again, flukes are sometimes found in the liver of the same subject and if in large numbers induce that condition known as "rot" or "liver rot," "cand," "iles," etc., with which we are not so familiar as formerly, though there is some reason for thinking this disease has been more prevalent quite recently than for some considerable time.

Tapeworms also may be found in association with the foregoing and other worms and aid them in their destructive operations. In some instances these large tapeworms are credited with causing death of lambs and young sheep, though the principal mischief is due to the minute worms in the stomach and intestines which have, owing to their small size, been overlooked.

Their frequent association in the same animal indicates that circumstances obtaining outside the sheep which favour the life and development of one species of worm probably favours others. With a view of preventing the occurrence of parasitic disease of the nature of the foregoing, measures to avoid the existence of conditions favourable to worms must be carried out systematically and on principle. If prevention is not better than cure, I fear little is to be hoped for as a result of application of medicine. Indeed, it often becomes a matter for consideration as to whether, after evidence of widespread and severe infestation with some species of worms, it would not prove economical to slaughter the whole flock.

There are other parasitic diseases of lambs and young sheep, the causal factors of which have a slightly different history. As an instance that known as "Gid," "Sturdy," etc., which usually affects only single or a few animals in a flock, but may under some circumstances obtain to an alarming extent, results from the immature form of a tapeworm, which in its adult state resides in the intestine of the dog.

Though our remarks have of necessity been confined to some diseases produced by internal parasites, and we deem these of great moment, it may not be concluded that we attach no importance to the effects of external parasites, or bacteria. We also realise that there still remain for elucidation many matters bearing on the preservation of the health of our flocks. Lambs and young sheep are liable to the same diseases as adult sheep, and whether in relation to those on which we have particularly dwelt in this paper or to others, we cordially endorse the familiar aphorism, "Prevention is better than cure." It may not be possible or expedient to adopt special measures for the prevention of special diseases, but there are certain principles, such as those referred to in relation to parasitic worm diseases of lambs and young sheep, which, if regularly and continuously adopted, are likely to minimise the risks of serious infestation or infection.

The Petrol Engine.—The triumph of the internal combustion engine for road locomotion has been fully assured, the same methods of propulsion are yearly increasing in favour for marine work, and without its aid so much progress would not have been made in the direction of conquering the air. Even the railway world, in one sense a competitor and sufferer, is turning its attention to the advantages of employing the internal combustion engine as a means of traction. - But there is still great scope for further development, and among the many fields which are not yet adequately covered may be mentioned that of agriculture. It is true that the petrol engine has received some amount of attention for farming purposes, but in this country its application on a large scale has not yet been seriously studied.

At Soissons, in the department of Aisne, an important agricultural district of France, an International Congress was recently held on the subject of "motoculture," and the delegates discussed various methods of replacing or aiding manual and animal labour by mechanical power. Three types of motor-engine were under consideration, each applying to special requirements of the farming community—(1) A stationary engine for interior work, such as lighting, water pumping, and chaff and root cutting; (2) a motor of higher power for big tractors and ploughs; and (3) a portable engine of lower power adapted for the lighter work of the soil, such as dressing and harrowing.

The Canadian farming community have already realized the advantages to be gained by adopting mechanical means, and the newer and larger farms possess a considerable amount of mechanical equipment. The commonest form of tractor in use for farming operations in that country is fitted with a four-cylinder vertical engine, which develops about 36 h.p. and is found quite powerful enough for all ordinary work. Two operators are needed for such a machine, one attending to the steering, while the second has charge of the mechanism which controls the plough, harrow, and roller. As the three operations of ploughing, harrowing and rolling can be carried out simultaneously, time is saved, while as many as ten or twelve furrows can be cut at once. Arranged in échelon fashion, the implements perform their functions one after the other. In harvest time no less than six combined reapers and binders are employed on each machine. Each reaper cuts a width of over 6 feet, and the crops are bound at the same operation. Moreover, this tractor by being fitted with a connecting shaft, at the end of which are placed pulley wheels, can, when not required in the field, be utilised for threshing, sawing wood, pumping water, and various other forms of farm labour.

It may be argued that the majority of Canadian farmers have the advantage of not being already in possession of implements and equipment like the farmers in the older countries who have expended much money in this direction. To a certain extent this may be true. Moreover, the agricultural industry here is not in such a flourishing condition that farmers can afford to scrap their existing plant and lay out capital in adopting new methods, even though these methods will be beneficial to them. In connexion with this difficulty, a policy of co-operation might be organized to assist, at any rate, the smaller agriculturist. Further, if constructors seriously turned their attention to catering for the farmer, some firms might be induced to supply machines on an instalment basis.

Mechanical transportation for farming produce is another important branch of activity for the petrol engine. Taken as a whole, the majority of agricultural producers are at some distance from a station, or centre of trade, and even from the local market. Here the petrol motor, in the form of some conveyance, whether owned privately or collectively, would be of material assistance. It will therefore be seen that there are two lines on which the supply of petrol engines can well be developed—one for work on or about the farm itself, the other as a means of transporting the produce to the market, mill, or consumer.

The all-important question of fuel also received attention at the recent French Congress, and it was agreed that the present price of motor fuel may act as a deterrent to mechanical methods being seriously considered by some of the farming community. Alcohol was advocated by the delegates, and benzol was discussed, but it was thought that its production was too limited in amount to be relied upon in future. Of course, if some form of alcohol suitable for motor work could be obtained at a cheap price, the agriculturist would gain both ways, because the fuel for his own and his colleague's machines could be obtained from agricultural products. The question of the expense of the motive spirit, though it may appear as a bar to French farmers, would not affect their British *confrères* in the same degree. Petrol has not yet reached the high price that is charged for "essence" in France, and benzol can at present be obtained in England at a lower price than across the Channel, where Excise duty is also added to the cost. In fact, the reason for the comparative scarcity of benzol at this moment is due to the spirit being exported in large quantities from this country to France. But a study of the petrol engines which are already in use for agricultural purposes will show that fuel is not really a serious item of expense; some of the existing engines are reckoned to run for a couple of hours on a gallon of spirit, during which time a considerable amount of work can be accomplished.

French designers and constructors were ahead of this country in the early days of the motor car, and if the recommendations of the recent Congress are seriously taken in hand, it would seem that the French agriculturists will have an opportunity of adopting mechanical methods on a large scale before the British farmer has been brought to see the advantages to be gained by utilizing the internal combustion engine on his farm. A few firms in this country have been enterprising enough to construct special motor-engines for farm work, but there is a large field as yet untouched, and the petrol motor in the form of a stationary engine, tractor, or conveyance may go a long way towards assisting the farmer. There is no reason why the petrol engine, one of the most recent important inventions, should not do much to aid one of the oldest of all industries—Agriculture.—A Correspondent in *The Times.*

Change of Blood.—Nothing is more common than to see the words "change of blood" given in an advertisement as indicative of the reason why some animal is offered for sale. The subject is generally a male, and is, may be, a stallion which has travelled the same district several years; a bull which has headed the herd for two or three years (but this is less common, for it is often the unmerited fate of a mature bull to be consigned to the butcher before his true worth has proved itself); a cock which has lorded it over the denizens of the poultry yard for a complete season; or some creature belonging to one of the less important branches of livestock. The chief thing is that it is generally a male, proving that breeders usually depend upon a change of male to secure "change of blood." As the male is "half the herd," it is obvious that by disposing of him a radical change is made.

Now the average farmer often regards an annual or bi-annual change of male as inevitable, and part of the regular procedure. He pays very little serious attention to the precise nature of the actual "blood" or pedigree of the individual he is purchasing. The strictly practical man takes an animal at what we may, perhaps, be allowed to call its "face value"; to his mind it carries its pedigree on its back, and if it has certain obvious qualities he does not trouble to look much further.

The attitude of a man who is endeavouring to establish a strain noted for excellence in some special feature is very different to this. He has learnt, probably by bitter experience, that a strain is only built up bit by bit with infinite care and patience, and to him a "change of blood" is a very serious matter, fraught with possibilities of great disaster, and only to be undertaken in case of dire necessity and after due consideration.

Thus it seems that the utility breeder considers he has everything to gain and little to lose by a "change of blood"; whereas the breeder for show has only one thing to gain but the possibility of losing all he has for years been striving for if he makes an injudicious introduction of "fresh blood."

When and why are "changes of blood" necessary, and how are they best introduced? These subjects are closely associated with the question of inbreeding, and it is from this basis that we must deal with them.

Very diverse opinions have been, and probably still are, held by leading scientific writers on the subject of inbreeding.

Darwin could never reconcile himself to the view that the mating together of nearly related individuals was natural or beneficial. He, together with many others, regarded " fresh blood " as inevitable for the perpetuation of a species or breed ; he thought that without it races deteriorated and eventually died out.

In support of this opinion we have the fact that a very great number of plants have evolved adaptations which seem specially designed to secure cross-fertilisation. Every breeder is well aware of how vastly superior in stamina a cross-bred usually is to a pure-bred, thus suggesting that the mere fact of crossing two pure breeds has a revivifying action. The crossing of the polled black Galloway with the Shorthorn gives us some of the best beef procurable ; the crossing of certain long-and short-woolled breeds of sheep results in animals which for early maturity and quality can hardly be surpassed ; the crossing of the Dorking and the Indian Game fowl gives the finest quality table poultry in the world. Experience has, in fact, shown that highly beneficial results are to be derived from making certain crosses. As an instance :

Some years ago the writer was breeding a few pure Devon Long-wool sheep together with a number of half-breds the progeny of a pedigree Devon Long-wool ram and pure Hampshire Down ewes. Although pure-breds and cross-breds ran together in one flock, the latter were always ready for the butcher first ; the majority of the pure-breds were usually still on hand in May, although their half-bred comrades had long since fulfilled their destiny. It was reckoned that there was something like three months difference in the average length of time taken to fatten these pure-breds and cross-breds, which at, say, sixpence per head per week, meant a considerable sum off the farmer's profits in the case of the pure-bred animals.

It is sometimes erroneously thought that all crossing is beneficial and leads to the production of improved classes of utility stock. This is far from being the case. In certain instances, the success seems to be due to the fact that the most desirable qualities of the parents blend, the result being progeny of an improved type with just those characteristics which man happens to desire.

There are many crosses in which no such beneficial blending occurs. So far from the offspring inheriting the best qualities of each parent, and being themselves superior to either, they may be like one parent only, or they may be of a " reversionary " type and inferior to either.

We have therefore to realise that, although certain definite crosses between two pure breeds may give us improved types, others, apparently equally promising, may totally fail in this respect, and until the experiment has been made it is almost impossible to prognosticate the probable result of a definite union.

It is well known that mongrelising—by which is meant the crossing of half-breds with a third breed, or the unsystematic mixing up of varieties without selection—leads to types which have lost those modern improvements which characterise the best specimens of pedigree strains. At the same time mongrels, in common with half-breds, are usually constitutionally sound, and in this respect far excel animals of more exalted lineage.

It seems to be the general rule that constitutional vigour is greatly increased by crossing, and for this reason, if for no other, breeders of both pedigree and commoner stock have occasion to resort to it.

But the breeder of half-breds is dependent upon the breeder of pure-breds for his stock animals. To produce profitable, quick-feeding cross-breds two absolutely pure breeds must be crossed, and were it not for the pedigree breeder the right class of animal would not be available to the farmer at a moderate price.

Pedigree animals or pure strains have been built up step by step to a very high state of perfection. It has been thought that the minute qualities which go to make, say, a prize Shorthorn are not hereditary in the way, for instance, that horns are, or some of the other specific characters natural to all cattle. On this point, however, science is not yet decided, for " show points " are many of them so minute and difficult for any but the trained eye to appreciate that it is not easy to experiment or formulate an opinion.

Experiments made by the writer with quick-breeding small animals have all tended to suggest that " show points " are as hereditary as any others. Undesirable characters are often dominant; but many more experiments on broader lines are needed to prove the case conclusively. It is certain, however, that many " show points " are unnatural, hence, besides being difficult to establish, they are lost if for even one generation careful selection is withheld.

Certain forms of deterioration, such as sterility, constitutional weakness, unthriftiness, etc., are liable to occur in pedigree herds and studs, and these troubles are generally attributed to inbreeding (pedigree being, as a rule, another name for more or less inbred animals). If we trace the troubles to their sources, it generally becomes apparent that the popular view is the correct one. It is very often considered, however, that the mere fact of mating nearly related individuals together *creates* sterility, or some other form of deterioration, and this the writer is not inclined to believe.

Inbreeding is not only common in many plants, but in some classes is the normal and only fertilisation which takes place. Just as some plants seem specially adapted to secure cross-fertilisation, so others, such as the members of the pea tribe, seem to be equally efficiently designed to prevent it. If self-fertilisation can take place for generation after generation in certain plants without visible deterioration, it cannot be so universally prejudicial as popular opinion would have us believe. Its chief result seems to be fixity of type and an absence of marked variation.

It is difficult to find authentic cases of systematic inbreeding in wild animals because we know so comparatively little of their relationships, lives, and habits. The habits of domesticated animals, however, give us some clue as to the probable behaviour of their wild ancestors under given conditions. We know, for instance, that newly purchased sheep never mingle at first with the flock, but keep in a bunch by themselves ; a new cow, far from being made welcome, is treated with scant courtesy by the older members of the herd, and so on. These and analogous traits all seem to point to the fact that "fresh blood" in tail female is seldom introduced under natural conditions. In the case of those animals which are gregarious it would seem that each herd is most likely to consist of very closely related females headed by a male which has asserted his supremacy and proved himself worthy of the position. Inference points strongly to the view that, in the case of most of our domesticated animals, it is natural for the females to prevent the admission of strange members of their sex within the family circle, hence "fresh blood," if it comes at all, must be, as a rule, brought in by the male.

It has recently been asserted, from evidence drawn from thoroughbred pedigrees and other sources, that "inbreeding in mares does not influence individual potency in an equally unfavourable degree as in stallions." This view of the subject requires further investigation, for if it can be proved beyond doubt that inbreeding can be carried out with greater impunity in the female line than in the male, breeders will have learnt a new truth which will aid them in their endeavours.

Admitting, then, the probability of extremely close relationship between the female members of a herd living under natural conditions, we have to endeavour to ascertain whether the lord of the harem is also likely to be of the same "blood." It hardly seems as if it could be otherwise. It will be admitted by everyone who has had much to do with animal breeding that no reluctance is ever shown by either sex to mating with near relations. It cannot be claimed that there is any natural antipathy among animals to consanguineous unions. Indeed, it is possible to go further and show that many, if not most, of the domesticated breeds of fancy animals have arisen from one solitary "sport," which has been perpetuated by close inbreeding. To give an instance of the making of a breed, it is known that all the long-haired guinea pigs in Europe are the descendants of a solitary long-haired male which was received in Paris from South America in the latter part of the last century. Many other examples could be given to show how well-established varieties have sprung from a single "sport," but it is unnecessary to labour the point.

There is no reason to believe that among wild gregarious animals the degree of relationship of the male is of any great importance. The male has to fight for his position, and defend it when attained. No weakling can do this, so that it is inevitable that the head of the herd is always the strongest and best of his kind. He may be, and probably is, consanguineously related to the female members of the herd, for were this not the case it is difficult to understand how the great fixity of type, *e.g.*, family likeness, observable in wild animals, would be preserved. As already stated, varieties, and presumably species also, more often than not arise from one specimen which has varied in a desirable direction, and from this we may infer that inbreeding of the closest description is absolutely inevitable to the establishment of a new variation, and that as a rule all the members of a species are very closely related. Such evidence as is at command tends to suggest: (1) That inbreeding is not necessarily injurious; (2) that it is the main cause of fixity of type; (3) that it can, under favourable conditions, be continued apparently almost indefinitely without deterioration necessarily setting in. If it is admitted that inbreeding is not in itself injurious or unnatural, how comes it that the breeders of pedigree stock so frequently feel the need of the revivifying effects of a "change of blood"? Surely this must be due solely to the want of sufficiently drastic selective influences.

The more carefully animals are reared, tended and housed, the greater is the chance of the unfit surviving, and as our pedigree herds are, as a rule, much more unfavourably situated in these respects than the average farmer's animals, it is inevitable that a greater delicacy is, sooner or later, bred into them.

To make it possible to continuously inbreed for generations without loss of constitution, selection for constitution as well as for "show points" must be carried on. In perpetuating "show points " tendencies to sterility, delicacy in infancy, conformation leading to difficulty in parturition, and a number of other all-important qualities are apt to be ignored until, in the course of a few generations, the breeder suddenly awakens to the fact that in gaining " show points " he has lost something even more important, though less obvious, which threatens the extinction of his strain. It is then that he resorts to " change of blood," with a view to stopping the rot which has set in in his own strain.

Will a " change of blood " by the introduction of, say, a male of a totally different strain, do what is required? Yes, usually; because no two inbred strains are likely to fail in precisely the same respect. In one strain the weak spot may be a tendency to sterility, in the other infantile troubles, and the crossing of the two and ultimate selection of the hardiest of the progeny may lead to the elimination of both troubles. At the same time it is better to cross with a strain with no known defects, for there is always the danger when such exist of grafting them on to the same stock, and thus, in the course of generations, finding that there are two troubles instead of one to deal with.

To cross two strains, however distinct, which are both suffering from the same trouble is, however, no better than to go on inbreeding each defective strain; for the crossing of two breeds or strains with similar qualities is to insure the perpetuation of those qualities, irrespective of the remoteness or otherwise of the relationship of the parents.

The pedigree breeder, then, usually seeks " fresh blood " periodically with a view to counteracting those unfavourable tendencies which an unnatural environment and absence of selection in certain directions inevitably lead to. He can generally get what he wants without much loss of type by introducing a male with a lot of the " blood " of his own strain, but reared in another herd or in another country.

There is no doubt that great importance attaches to female lines; but it is questionable whether an undue value is not sometimes set upon certain of them. At sales of important herds or studs there is sometimes what appears to the onlooker to be the wildest bidding to secure an individual of a certain female line. If she is a worthy representative, all well and good; but if, as sometimes happens, the price is being offered for pedigree alone, one cannot but wonder whether pedigree *without* points is as potent for good as the optimistic purchaser supposes it to be.

The method adopted by some very successful breeders, who find that under modern conditions of breeding pedigree stock a constant "change of blood" is imperative, is to buy at any time it may come upon the market a male or female of certain female lines known to "nick" well with the strain. It should be observed, however, that these successful breeders never depend upon pedigree alone; the animals they buy must be worthy representatives of their line, and must themselves possess all those characteristics for which their strain is famous.

The comparatively poor man who cannot afford to pay the inflated price which a combination of pedigree and points in the same individual commands may well ask: Should I buy for pedigree or points when seeking a change of blood? The writer unhesitatingly recommends "points," because, even if a drastic "change of blood" leads in the first generation to loss of type, yet the breeder knows that the good qualities are there and are only temporarily eclipsed and can be regained, *plus* markedly improved constitutional qualities, by judicious inbreeding in the next generation.

If time is no object and a breeder can afford to wait several years for his "fresh blood," he can get it comparatively cheaply by buying a very typical female of another strain, mating her to a male of his own, and keeping her best son as a future sire. This is a cheap and satisfactory way of introducing "fresh blood" without great loss of type; but as it must be arranged for long before the actual need arises, it is only those breeders who look well ahead who are able to adopt the method.

In conclusion one word of warning must be given. Although a famous name may figure more than once in an animal's pedigree, it does not necessarily follow that the individual possesses any of the qualities for which its ancestor was famous. Fractions of "blood" are of small value without ocular demonstrations of the definite existence of certain qualities in the descendant. It is doubtful whether it is necessary to pay attention to more than the two first removes of a pedigree, for it is possible for an individual to be *on paper* "full" of a certain "blood" and yet possess none of the desirable characteristics which made its ancestor's name famous.—C. J. DAVIES in *Farmer and Stockbreeder Year Book.*

Dairying in Germany.—We take the following extracts from a valuable paper by Dr. Hittcher recently contributed to the "Monthly Bulletin of Agricultural Intelligence," which is published by the International Institute of Agriculture:—

During the last decades, dairying in Germany, thanks to the constant extension and improvement of cattle keeping, has developed to such an extent that the yearly production of milk is now worth about £150,000,000.

Whilst in 1871 the German Empire had an excess of Dairy Products and exported about £1,912,000 worth, since 1896 it has been obliged every year to import increasing quantities from abroad in order to meet demands. In 1912 the excess of importation amounted already to £9,617,650, or 6·5 per cent. of the home production. It behoves cattle breeders to increase still further the milk yield of the cows, in order to render Germany independent of foreign countries. The number of cows at present existing in Germany is, in round numbers, 11 millions. If the average milk yield per cow be taken at 506 gallons (2,300 litres) per annum, the total amount of milk produced every year is about 5,566 million gallons. In the large towns the daily consumption of milk per inhabitant ranges from 0·39 to 0·72 pint per day. In the smaller towns the consumption is greater and in the country it is still more. On an average 0·79 pint per head per day may be taken, or 36·8 gallons per annum. With a population of 67 millions in round numbers, this amounts to a consumption of 2,417 million gallons, which is 43 per cent. of the whole quantity of milk produced. If it be further assumed on the strength of careful calculation that the rearing and fatting of calves absorbs 445 million gallons, or 8 per cent. of the milk produced, it is evident that at present only about 49 per cent. remains for the preparation of butter and cheese.

In milking and the further handling and working up of the milk, it is sought as far as possible to conform to hygienic rules. The stables are arranged with a view to keeping the cows clean and the milk as wholesome as possible. While formerly in some stables the dung was allowed to remain under the cattle, now the Dutch system of stabling prevails, in which a gutter for the reception of the droppings runs along the back of the stalls and is cleaned out every day.

In order to judge whether the milk delivered by the cow-sheds has been obtained with due regard to cleanliness, the larger dairies test the milk of each farm daily for cleanliness. The reductase test is also frequently adopted, as it allows an opinion to be formed as to the number and kind of bacteria present in each consignment of milk.

With the object of meeting the just demand that all the milk put on the market be wholesome and above all free from tubercle bacilli, the East Prussian Dutch Herdbook Association adopted in 1900 suitable measures, being the first in the whole world to do so. In the East of Prussia this example was soon followed by co-operative dairies, control and cattle breeding associations, etc., so that in the above province at the present time no less than 82,000 animals above two years of age are submitted to the tuberculin test. The total number of animals (including young animals and calves) in the herds which are submitted to these measures is about 200,000.

Some farms already use milking machines. Though it is undeniable that of late years they have been much improved, I am of opinion that they can never take the place of a good milker and can only be considered as a resource in time of need which is useful when no suitable hands can be engaged. It must not be forgotten that the high production of milk of our cows is not a gift of nature, but rather a quality which has been artificially induced in them to a great extent by the stimulus of hand milking. No milking machine is capable of handling an udder like an experienced milker, nor is it capable of considering the individuality of each animal. So important is this question, that all the efforts made in the several districts for the improvement of hand milking and the institution of milking schools should not be neglected, but unweariedly furthered.

The so-called control associations, whose task it is to determine the quantity of milk produced by the individual cows of their members, and its fat content, together with the corresponding quantities of fodder consumed, have spread very rapidly. In the Kingdom of Prussia there are at present about 500 such associations in existence, with a membership of 7,500 farmers, possessing 220,000 cows. That this system of control is one of the most powerful factors in the improvement of the milk yield of our cows is now generally recognised.

With the constant growth of large towns, the task of providing them with milk becomes increasingly difficult, as it has to be conveyed from greater distances. In such cases the milking is carried out with the utmost cleanliness, the milk is immediately passed through a cottonwool filter and cooled to 1° to 3° C. (34° to 39° F.). During carriage it is kept as cool as possible. None of the other proposed methods for preserving milk have proved advantageous in practice.

As the great majority of our babies just in the most critical period of their existence are not suckled by their mothers, but nourished on cows' milk, it is of the highest economic importance that this food should reach the consumer in the best possible condition, and this can only be accomplished by well-appointed large firms, which thus act as institutions for the protection of babies.

The number of separators at work in Germany is over 370,000. They are to be met with not only where butter is made, but also in many farms which send the separated cream to the dairies. This production of cream has spread, especially in those districts where large estates are prevalent. In the large butter factories all the improved methods suggested by science and practice are adopted.

The efforts of the dairies to improve the quality of their product are all the more satisfactory as foreign competition becomes keener every year, so that in many quarters the demand arises for the introduction of a trade mark for home butter.

Of the hundreds of dairies which have arisen during the last decades only a relatively small number make cheeses, because this industry is attended with greater risks; it is also more exacting as to the composition of the milk, it requires more labour and pains, greater knowledge and experience, and, lastly, its products are not immediately saleable like butter.

Considering that a dishonest competition has made itself felt in the cheese trade, efforts are being made to prevent cheeses made from skimmed milk being sold as half-fat cheeses, or these latter as whole milk or cream cheeses.

The preparation of milk powder or dried milk, has developed of late years. It is connected with the rapid rise of the chocolate industry, as the dried milk is chiefly used in the preparation of milk-chocolate, cakes and biscuits, besides being used in the household for puddings. It is, however, no substitute for fresh milk.

Recently the extraction of casein from skimmed milk has somewhat increased. It is used in the industries, and also in the preparation of articles of food. Among the former, paper, colours, and adhesives are the chief; when treated with metallic salts and formaldehyde, galalith is the result, this according to the substances added, gives a good imitation of celluloid, ivory, coral, tortoise-shell, etc. It is easily worked and polished, and is not inflammable, like celluloid. A whole series of food preparations are based on casein: nutrose, eukasin, sanose, sanatogen, plasmon, eulactol, etc., which are sold at disproportionally high prices.

Some large cheese factories find it profitable to extract the milk sugar contained in their whey; this sugar is used in the preparation of medicines, in the nourishment of infants and in the industries. One factory prepares lactic acid from whey.

That dairying in Germany is in a most flourishing condition, that it has already achieved extraordinary progress and that this is due to the unceasing activity of dairy advisers, teachers, and experts, is admitted by everyone.

Swedes and Turnips.—Professor Douglas Gilchrist, in a recent lecture, said:—The County of Northumberland has always taken an important position in the development of the culture of swedes and turnips. J. Bailey and George Culley, in their work on the Agriculture of Northumberland (3rd edition, 1808), give a good account of turnip cultivation in the county up to that time. They state that turnips were first grown for cattle feeding at Rock, near Alnwick, about 1730, and that their growth for this purpose quickly spread in the Lesbury district. The hoeing of this crop was first performed by skilled men of the gardening class, who received high wages, but the ordinary farm hands, including women, soon became quite good at the work. Craig of Arbigland, Dumfriesshire, drilled turnips in 1745, and in 1764 Dawson grew 100 acres drilled in ridges near Kelso. Matthew and George Culley migrated from Gainsford, near Darlington, to Fenton, in Glendale, in 1767. George Culley, on his way from Fenton to a fair at Kelso in that year first saw a field of drilled turnips, and was greatly impressed with the successful growth of this crop. The brothers Culley took Wark Farm of 1,200 acres in 1786 at an annual rent of £800. This they cultivated with marked success, so much so, that as a result of their work, and of increased prices, the rent of this farm was increased to £3,200 in 1812. To-day we are meeting in the near neighbourhood of Wark Farm, and we realise from what we have seen, the high pitch at which farming is now carried out in this district. The need of high skill in the management of a farm, of the practice of the greatest economy in every branch, of ensuring that every crop gives as nearly as possible the maximum return, and of utilising capital to the utmost advantage was never greater than under present conditions. To return to the Culleys. They and other pioneers developed the practice of drill husbandry in the cultivation of turnips. The raised turnip drill soon became known. Drilling was done much in the same manner as now, and the dung was enclosed in the drills. At first the drills were made three feet wide, but it was soon found better to make them a width of only two and a half feet or rather less. The cultivation of turnips for sheep and cattle feeding quickly developed. About 1775–80 the Swedish turnip was introduced into Scotland from Gothenburg, when they were known as ruta baga. The Culleys and others took up their cultivation. It is interesting to note that they are still called " bagies " on Tweedside. By 1804 swedes were in general cultivation in the north of Northumberland. George Culley made careful tests with rams and ewes of the comparative feeding values of turnips and swedes, and found that swedes had a considerably greater feeding value than turnips, that sheep required a much larger quantity of turnips than of swedes, and that swedes kept much better till the late winter and spring.

Trials of the feeding value of swedes were carried out in the Sheephouse at Cockle Park during the winter of 1902–3, and similar trials were made with young cattle during the winter of 1903–4. Three varieties of swedes, varying considerably in their content of dry matter, were fed to different lots of cattle and sheep. The content of dry matter in the swedes varied from 10·75 per cent. to 12·22 per cent. The results for the two winters showed that the high percentage of dry matter in swedes means at least a correspondingly high feeding value, and therefore that the feeding value of swedes varies in proportion to their content of dry matter. Variation in the amount of dry matter in swedes was found to be due largely to three factors, variety, season, and soil.

Trials of the feeding of cattle without roots, and with various quantities of swedes, have also been made at Cockle Park.

The first trial, made in the winter of 1900–1901, compared the feeding of 56 lbs. of swedes with 28 lbs. swedes daily to young fattening cattle, averaging 670 lbs. live weight. In this trial 3 lbs. seeds hay, ½ lb. maize meal, and ½ lb. treacle, took the place of 28 lbs. swedes. Both lots of cattle have done equally well, but as the swede substitute cost 9s. 8d. or more than the ton of swedes, the financial returns were in favour of swede feeding.

The second trial was made in the winter of 1901–1902 with young cattle. In this case 28 lbs. swedes daily were compared with no swedes, the same swede substitute being used as in previous experiments. The cattle receiving no swedes gained 1 lb. less weekly than those receiving swedes, and as the substitute for swedes was considerably more costly than the swedes the results at the close were in favour of swede feeding.

The third trial was made in the winter of 1907–8, with two lots of store cattle from six to nine months old, averaging 535 lbs. live weight. On the average 21 lbs. swedes were fed to lot 1, while lot 2 received no swedes, but 1 lb. meadow hay and 2 lb. maize meal as a substitute, which cost 14s. 2d. per ton of swedes. This trial showed that young cattle can be quite successfully brought through their first winter without roots, for both lots of cattle were in good condition at the end of the winter. But the average weekly gain was over ½ lb. less when no swedes were used, and the financial result was in favour of the swede ration, mainly because of the high cost of the root substitute.

The fourth trial was made during the winter of 1907–8 with two lots of blue grey fattening cattle, averaging 1,027 lbs. live weight. Lot 1 received on the average 56 lbs. swedes, and lot 2, 28 lbs. swedes daily, with 2½ lbs. meadow hay and 2 lb. maize meal as a substitute for 28 lbs. swedes, again costing 14s. 2d. per ton of swedes. Lot 2 gained 2 lb. a head weekly more than lot 1, but as the cost of the food was greater for this lot, the net gains at the close were only slightly in favour of lot 2, which received no swedes.

The fifth trial was made in the winter of 1909–10 with two lots of blue grey fattening cattle, averaging 1,016 lbs. live weight. Lot 1 received on the average 112 lbs. swedes, and lot 2, 56 lbs. swedes daily, with 2 lb. Bombay cotton cake, and 10 lbs. oat straw in the place of 56 lbs. swedes. This cost 10s. 2d. per ton of swedes. In lot 2 each beast gained 1¼ lbs. weekly more than those in lot 1, which received the full amount of swedes, but owing to the greater cost of the swede substitute, the financial result was slightly better with the larger quantity of swedes.

All these results showed that, at the current prices of feeding stuffs, swedes are worth considerably more than 6s. 8d. per ton for cattle feeding, the price at which they were valued at these trials. The substitutes for swedes cost on the average 11s. 6d. per ton of swedes. In view of these results, swedes have been valued at 10s. a ton in the feeding trials at Cockle Park since the winter of 1911–12.

These trials show that it is quite possible to substitute concentrated foods and fodders for the greater part of a root ration for cattle, but that at least a small amount of roots is desirable. When this is done equivalent food nutrients should be substituted. In these trials, the rations were calculated on the basis of the Wolff-Lehmann feeding standards for ruminants. These are based on the amounts of the various constituents of food they contain, which are actually digested by ruminants, and not on the total amounts.

From these results, it may be assumed that the nutritive matter in swedes is equal in value to the same amount of nutritive matter in our more common cakes, meals, and fodders. In the first two trials part of the fodder was chaffed, the cake and meal mixed with it, and the whole mixed with treacle water. In the last three trials, all the fodder was fed in its long condition, and the cake and meal were fed dry. The results have not shown any advantage from the first method of feeding.

During the six years 1907–12, four varieties of swedes, six varieties of yellow turnips, and five varieties of soft turnips, have been grown at Cockle Park under the same conditions of soil and manuring. The swedes and yellow turnips have always been sown at the same time, while the soft turnips have usually been sown a few weeks later.

The results obtained have been as follows :—

	Avg. crop per acre.		Avg. % dry matter in roots.	Avg. weight dry matter per cwt. acre.
	Tons.	cwt.		
Swedes ...	19	14	11·86	46¾
Yellow Turnips	24	19	9·26	46
Soft Turnips ...	19	19	7·88	31½

These figures show that heavier crops of yellow turnips than of swedes can be grown at Cockle Park under the same conditions as to time of sowing, soil, and manuring, but that the amount of dry matter contained per acre is practically equal. The soft turnips sown later naturally produce less dry matter per acre. The bronze top variety of swedes have on the whole proved better croppers than the purple top varieties. Among yellow turnips Purple Top Aberdeen has produced the largest amount of dry matter, and among soft turnips Purple Top Mammoth, Pomeranian White and Centenary have all done well in this respect. It is important to note that the amount of dry matter produced per acre from a root crop gives the best indication as to its feeding value, and not the weight of roots produced. On the basis of the above dry matter content, if swedes are worth 10s. a ton, yellow turnips are worth 7s. 10d., and soft turnips 6s. 8d. per ton.

Swedes v. yellow turnips for fattening cattle.—In the winter of 1911–12 two lots of blue grey cattle were fattened at Cockle Park, one lot receiving 56 lbs. swedes and one lot 75 lbs. yellow turnips daily per 1,000 lbs. live weight. The swedes and yellow turnips each contained the same amount of dry matter. The cattle receiving swedes each gained on the average 11·81 lbs. weekly in live weight, whereas those receiving yellow turnips gained 12·03 lbs. weekly, thus showing that the feeding value of the same amounts of dry matter in swedes and in yellow turnips is practically equal.

Swedes v. yellow turnips for store cattle.—In the winter of 1911–12 two lots of young blue grey cattle, six to twelve months old, were wintered at Cockle Park. They each averaged 500 lbs. live weight during the winter. One lot received daily 25 lbs. swedes and another lot 33½ lbs. yellow turnips, containing an equivalent of dry matter. The cattle receiving swedes gained 8 lbs., and those receiving yellow turnips 8·4 lbs. her head weekly, so that again the results may be considered equal. The same lots of cattle were kept in store condition under similar conditions on pasture during the following summer when the cattle which had received swedes in winter gained 15·6 lbs., and those that had received yellow turnips 14·9 lbs. per head weekly, again showing practically equal results.

In the winter of 1912–13 two lots of young blue grey cattle, six to twelve months old, were again wintered at Cockle Park, one lot receiving 25 lbs. swedes and the other lot 33½ lbs. yellow turnips per 500 lbs. live weight (practically per head) daily. The lot receiving swedes gained 6·3 lbs. and the lot receiving yellow turnips 6·62 lbs. per head weekly. They were kept as stores on pasture during the following summer when those which received swedes in winter gained 15 lbs. and those which received yellow turnips 13·75 lbs. per head weekly, again showing practically equivalent results throughout the trials.

Swedes v. yellow turnips for fattening sheep.—In the winter of 1911–12 two lots of sheep were fed in the Sheephouse, one lot receiving 5 lbs. swedes and the other 6¾ lb. yellow turnips per head daily. These contained equivalent amounts of dry matter. The swede lot gained 1·18 lbs. and the yellow turnip lot ·94 lbs. per head weekly. This result was slightly in favour of the swede ration.

In the winter of 1912–13 two lots of sheep were again fed in the Sheephouse, one lot receiving 8 lbs. swedes and the other an equivalent amount of yellow turnips (10½ lbs.) per head daily. Those receiving swedes gained 2·05 lbs. and those receiving yellow turnips 1·99 lbs. per head weekly, being practically equal results.

A careful study of all these results shows that the feeding value of an equal amount of dry matter in swedes and yellow turnips may be considered equivalent. In all these trials other suitable foods were fed along with the roots so as to make up suitable rations.

The best order of feeding is that soft turnips should be fed in the late autumn to early winter, yellow turnips from then till Christmas, and swedes from about that time till the spring. Soft turnips include white turnips and the softer yellow turnips, such as Centenary and Early Sheepfold.

Swedes and turnips compared with mangels.—The returns of the Board of Agriculture for 1912 contain the following figures :—

Average crops (roots) per acre. (10 years, 1902-1911.)

		Northumberland. Tons.	Durham. Tons.	Five S.E. counties. Tons.
Turnips and swedes	...	16	14¾	12¾
Mangels ...	...	15	16½	20¼

It will thus be seen that the average crop of mangels is 5¼ tons an acre less in Northumberland than in the south-eastern counties. On the other hand the average crop of swedes and turnips in Northumberland is greater by 3¼ tons than in these counties. The mangel crop never reaches full maturity in Northumberland, as it is checked by autumn frosts before this stage is reached. The longer summers of the south of England favour the mangel crop, both in weight of crop and in quality. Mangel tests at Cockle Park show that these have not a higher content of dry matter than swedes at that station. In the south they considerably exceed swedes in content of dry matter, and consequently in feeding value. On the other hand the characteristic climatic conditions of the north of England are more favourable to swedes than those of the south. A summer not too hot, with a moderate rainfall, and freedom from autumn frost and from severe frosts till well into the winter are the most favourable conditions for swedes.

Mildew, a troublesome pest on swedes in the south, did great damage to early sown swedes in Northumberland in the dry and hot season of 1911. Crimson King purple top swede and Dale's green top yellow turnip withstood this disease better than the other varieties. In the south of England swedes are not sown till from the end of May till the end of June, mainly with the object of escaping this disease. In the north of England and in Scotland swede sowing commences early in May, but when this pest is feared it is advisable to commence sowing a week or two later. In the dry season of 1911 late sown swedes were and again this season are likely to be the heaviest croppers, except of course, where the plants failed at the start.

Effect of season on quality of swedes.—The dry matter in swedes at Cockle Park has varied from 10·32 per cent. in 1901 to 14·96 per cent. in 1904. This means that 20 cwt. swedes in 1904 and 29 cwt. of swedes in 1901 were about equal in feeding value. Careful notes at Cockle Park have shown that the frequent occurrence of summer, and especially of autumn frosts, greatly reduces the content of dry matter in swedes. Although the season of 1912 was cold and wet the autumn was practically free from frosts and swedes had a high content of dry matter (13·21 per cent.). This greatly helped live stock feeding on swedes in that year, especially as hay and straw were very low in feeding value in that season. This autumn has also been exceptionally free from frosts so that swedes are likely to have a high feeding value this winter.

Owing to the considerable rise in the prices of feeding stuffs, especially of cakes and meals, swedes and turnips have had a considerably enhanced value for the past few seasons, and as already stated trials at Cockle Park show that substitutes are likely to cost more than 10s. per ton of swedes.

The various varieties of swedes and turnips are likely to have different values on different farms and under different climatic conditions, and farmers should make careful tests to ascertain what varieties will suit their purposes best. As already noted mangels can only take the place of these roots in the north to a limited extent, but at the same time their better keeping qualities make them valuable for late spring and early summer feeding, so that a small proportion of these roots have usually a considerable value.—*The Berwick Journal.*

Tuberculosis and Milk.--For many years past the question of how far tuberculosis, or what is commonly called consumption in man, is due to the drinking of milk from tuberculous cows has attracted considerable attention. Medical men, anxious to find some explanation for the prevalence of tuberculosis in children, at once came to the conclusion that it must be due to the fact that children were fed largely on milk, and milk was known to sometimes come from cows suffering from tuberculosis.

It was easy to assume that here was a distinct case of cause and effect. But there was no proof. When, therefore, the great bacteriologist, Koch, publicly announced that in his opinion tuberculosis in cows had very little to do with tuberculosis in man, and that these theorists were mistaken, he had to face a storm of hostile criticism. But Koch was a man whose opinion was too weighty to be put aside. The subject must be investigated, and so a Royal Commission was appointed. While this Commission was at work the medical profession were still clinging to their belief, and, in order to make sure that children should not be infected, were strongly advocating that all cows' milk given to children should be sterilized, or, at least, pasteurized, that is heated for some time to a temperature not below 160° F.

The Royal Commission reported from time to time, although without satisfying many who had studied the subject, that the evidence justified their conclusions; their statements were, however, in the main accepted. This Report gave rise to legislation, and to efforts at legislation, which, fortunately, have not yet passed into law, intended to give to local authorities, or the Local Government Board, control over the milk supply. It confirmed the opinion of the doctors in advising that milk given to infants and children should be sterilized, and led the Board of Agriculture to issue an order, the object of which is to get rid of tuberculosis from the dairy herds of this country. With this Order we have no fault to find, provided the object can be attained at a reasonable cost; and the subject is dealt with more in detail in a preceding page of this Journal (see p. 39). The two points to which we now wish to draw attention are: (1) the Report of the Royal Commission; and (2) the desirability of sterilizing milk for infants and children.

The first subject has been again brought to the front by an article from the pen of Dr. Ralph Vincent, and the second by some researches carried out by Mr. Mond, which were recently the subject of an article in *The Times*.

Dr. R. Vincent, writing in "Science Progress" for 1912, said:

"The final Report of the Royal Commission on Human and

> Animal Tuberculosis has almost completely failed to carry conviction to those who have studied the subject. There are pathologists who express anything but a very modified approval of the Report, the usual view being that the Commissioners have throughout failed to grapple with their subject in the logical and thorough manner essential in an inquiry fraught with such consequences to the public health. The general community, unaware apparently of the reception that has been accorded to the Report by scientific men, is disposed to regard the questions discussed by the Commissioners as finally settled: their decisive statements and the vigorous terms in which their conclusions are formulated have been extensively reproduced in the press and have done much to mislead both the medical profession and the general public. In these circumstances, it would appear to be a duty to indicate the fallacies inherent in the Report and the grave dangers involved in the acceptance of the views so strongly advocated by the Commissioners."

The following extract is sufficient to show what are the results of this study:—

> "Throughout the Report the Commissioners write as if they were obsessed by the idea that they have been appointed to bring in a verdict that a good deal of the tuberculosis prevalent in man is conveyed to him by means of cows' milk. It is a conclusion wholly divorced from reality, and it would be strongly and earnestly contested by nearly every practical physician who has studied the incidence of the disease. The fact is that the endeavour to trace any considerable amount of tubercular disease in man to infection by means of cows' milk has completely failed."

Later on Dr. Vincent examines one of the cases—that of Tommy Smith—on which the Report was founded, and writes as follows:—

> "But we may study the methods of the Royal Commission a little further. Tommy Smith, in fact, does contract the disease. At a later stage, his case comes under the observation of the Commissioners. They find the "bovine" bacillus, and straightway the case joins the list of cases proving the transmission of the disease by means of cows' milk. Unfortunately the parents of Tommy Smith have been for many years past in very poor circumstances. They have scarcely known what fresh milk is. They have generally used condensed milk, and when more than usually pressed they have used condensed milk

> made from skimmed milk. But what does that matter? Everything is grist to the mill of the Royal Commissioners. And so they proceed to their final conclusions, displaying a wealth of assertion that makes one gasp. The following quotations are taken from page 39 of the Final Report:— 'The evidence which we have accumulated goes to demonstrate that a considerable amount of tuberculosis of childhood is to be ascribed to infection with bacilli of the bovine type transmitted to children in meals consisting largely of the milk of the cow.' '.... The potency of tuberculous cows' milk in the causation of the tuberculosis of infancy and childhood is clearly demonstrated.' These statements are simply untrue. There is not a line of evidence to show that the children whose cases were investigated by the Commissioners ever received cows' milk—tuberculous or otherwise."

This is by no means the first criticism which has been passed upon the Report, and probably it will not be the last.

But if the conclusions of the Royal Commission are not tenable what becomes of the practice of sterilizing milk given to infants?

We now pass to a consideration of the work of Mr. Mond, which is described in the following extract taken from the *The Times*:—

> "Mr. Robert Mond, son of the late Dr. Ludwig Mond, recently conducted a representative of *The Times* over his experimental farm at Coombe Bank, Sevenoaks, and entered upon an exposition of the views which he had formed after a series of investigations extending over many years as to the relationship between milk and tuberculosis. The investigations were conducted both at his farm and at the Infants' Hospital, Vincent Square, S.W., founded by him, and supplied with milk from Coombe Bank, and pointed to the conclusion that tuberculosis was not conveyed by milk from cattle to human beings; further, that sterilized or condensed milk was a danger to the children fed upon it, and definitely predisposed them to tubercular infection. Numerous investigations, he said, had been undertaken. Pathological examinations showed that infection by tubercular bacilli rarely, if ever, occurred from the bowel—as would be the case were milk the agent of transmission. The seat of invasion was ordinarily in the air passages. Children fed upon the milk of cows which subsequently were found

> to be suffering from tuberculosis had not—and investigations were made in a large number of cases—contracted the disease. On the other hand, at the Infants' Hospital a large number of those children who were known to have been fed exclusively from birth upon sterilized or condensed milk—which, of course, could be guaranteed tubercle-free—developed tuberculosis. Milk was a living fluid intended by nature for immediate consumption. If boiled it was chemically changed and lost its nutritive value."

Naturally the publication of these articles has given rise to much discussion, and many opinions have been expressed. *The Times* itself, in a leader, deals with the subject in its usual broad-minded way in the following words:—

> "The results of Mr. Mond's investigations are of great national value, affecting as they do intimately both producers and consumers. It is not to be expected that the conclusions arrived at will be accepted by all, but there is good reason to believe that Mr. Mond is on the right lines when he deprecates complete sterilization—it should be noted that the term is used as distinct from pasteurization—and defends the use of milk in its natural state. The more drastic forms of treatment have long been abandoned at some of the principal hospitals, for the reasons that have influenced Mr. Mond in advocating the consumption of milk in its raw state. The theory that boiling destroys the harmful germs without deteriorating the nutritive value of the milk, has been disproved in the feeding of animals as well as in hospitals. When the tuberculosis experiments at Woburn were begun the calves were fed with sterilized milk, with the view of securing immunity from infection. The plan, however, had to be changed, as the animals suffered in health as well as in growth, heavy mortality being feared had the diet been continued. While the broad question of the milk supply may be a fit subject for further investigation, evidence gathered from various sources already exists to point to the advisability of avoiding the use of boiled milk for human or animal consumption. The consumer will derive comfort from Mr. Mond's remarks concerning the use of tuberculous milk, but it would be unwise to assume too confident a belief in its harmlessness. It would be safer to proceed on the assumption that tuberculous animals are a source of danger and should be weeded out as quickly as may be consistent with reasonable regard for the interests of the owner."

The dairy farmers' point of view in relation to these subjects is well put in a leader which appeared in the *Dairy World* :—

> "Since the memorable pronouncement of Dr. Koch some years ago, when he declared his conviction that tuberculosis in human beings had no relationship to that in bovine animals, no statement in regard to milk has caused so much stir as that of Mr. Robert Mond, which we reproduce at length in another column. Briefly put, his investigations have led him to the conclusion that the dangers which are supposed to surround the milk supply, in regard to the communicability of tuberculosis of the bovine type to human beings, are non-existent, and that the sterilization of milk which is supposed to insure immunity from such dangers is no safeguard against the risk of the disease being contracted, but that, on the contrary, by the devitalising effect on the milk of the process of sterilization, consumers are rendered even more susceptible to that dread malady. It is a bold statement, and an astounding one, to those who have held what may be regarded as the generally accepted views on this subject, and it is certain to be stoutly contested. But when we consider the grounds on which Mr. Mond's conclusions are based, it must be admitted that his case is a strong one and one which will require more evidence than has hitherto been available to disprove. His investigations have been of a distinctly practical character, quite different from the ultra-scientific researches of other observers, upon which the case against the milch cow has been built up, and having had the advantage of the co-operation of Dr. Ralph Vincent of the Infants' Hospital, his views have been put to a test which gives to them a significance of the highest importance. The subject of the relationship of milk to tuberculosis in infants is not new to the readers of this journal, and attention has more than once been drawn to the point which Mr. Mond makes—that the seat of the disease is rarely if ever to be found in the bowels, but that it has its origin primarily in the air-passages, and from thence is communicated to the alimentary system. The detractors of milk on the other hand, would lead the public to infer that every case of tuberculosis of the bowels is communicated by the food taken, ignoring the important fact to which we have alluded and which was emphasised long ago by Dr. Koch himself. It will be interesting to know what answer will be made to the inquiry as to how children who have been fed on sterilized—and therefore non-tuberculous—milk have contracted tuberculosis of the "bovine" type. The whole subject is certain

> to be thoroughly discussed and not without vehemence. So far, however, opinions have been expressed with caution, the prevailing view being that the matter calls for further and immediate investigation. It is natural that the medical men who have been associated with the demand for municipal milk depots should take exception to the latest pronouncement, but it still remains for them to show that the use of untreated milk would not, as in Mr. Mond's experience, have produced better results. There is undoubtedly a growing feeling that the public have been unduly alarmed by the tuberculosis scare, and the fact is being appreciated that, notwithstanding the patient and elaborate investigations of the Tuberculosis Commission, there is still no positive evidence that the existence of tuberculosis in animals has any relationship to that in human beings. A sufficiency of fresh milk in its natural condition is the great desideratum, and where this is available experience has shown that there is little to fear from the ubiquitous microbe which, of one kind or another, is, like the poor, always with us. The question of the effect on nutrition of the sterilizing process is one apart from that in relation to its protection against disease. It has been suggested that the arguments against this treatment of milk might apply equally to all cooked foods, but it must be pointed out that there is this difference, viz., that in the ordinary course of nature milk is given to the young in its natural raw condition, whilst in the case of other foods cooking is essential to its being consumed at all. We must leave this point to be fought out by the medicos, our chief concern being in the proposition that it is not necessary in the interests of the consumer."

The Dairy Industry, and especially the production of milk for use in towns, has become an important branch of English agriculture, and the control of this industry, already more searching than that of probably any other, ought not to be made still more strict, on grounds which are open to the criticisms reproduced above.

Winter Stabling of Horses.—Most of us have very strongly ingrained views on horse management, and are apt to think that those who disagree with us know little. However, in the management of farm horses there is room for very different methods, without either party being altogether right or altogether wrong. In the winter management of horses it is obvious that on land where there is a heavy wheat seeding and a great breadth of stubble ploughing to be done in winter, the same treatment is not necessarily required as where there is little work to do at this season. As a broad basis, horses need to be fed to do the work required of them, and to hold a reserve of strength to meet the heavy work of spring. Ordinary experience teaches the man of common intelligence what food should be given to maintain horses economically for the purposes they have to serve. Where observation fails, any advice is likely to be of little avail. It is not, however, out of place to call attention to some features which bear on horse management, even though they may have contentious aspects.

Controversy often disturbs the satisfied mind, and it is not bad for us to be disturbed occasionally when we have got into a rut. The subject of chills is a question of this sort. Some horsemen believe in stabling, or, at any rate, keeping, cart colts in warm yards; others prefer keeping them on pastures, with only simple run-in shelters to keep wet and wind away; others go as far as preferring no shelter beyond that afforded by hedges. Surely there is room enough here for a controversy of any dimensions, and when one small subject offers such a big field for discussion, if not for dissension, one realises what a big subject horse management may be. It is only natural after this that there may be those who advocate the free admission of air into stables, and others who are afraid of air, because it suggests draughts and chills. After all, there is much to be said for and against either. Circumstances greatly alter cases.

A colt running rough, with the thick coat a horse ordinarily gets in winter, can withstand great cold and much wet. A horse thrives in almost arctic cold or tropic heat, provided he is allowed to look after himself. Nature intended him to do it. A horse lying out rarely catches a cold, because he takes what exercise he feels is necessary, and so maintains (provided he is sufficiently fed) a good circulation of blood. If he stands still, he backs to the wind, and his thick, long tail acts as a wind shield; his long mane protects the blood-vessels in the neck, and the thick flesh of the hindquarters keeps the wind off his more important organs, whilst his thick coat shoots the wet. Dock him, pull his mane, cut or groom his coat off him, and turn him out, and his chances are not nearly so good. But, taking cart-horses generally as kept in the stable at night, and out of doors hard at work during the day, and you then have an animal under totally different conditions, and needing wholly different treatment. His coat is groomed fine, he cannot move to get up circulation if he is cold; if a draught blows on one point, he cannot escape it. Very often he comes in from work either sweating or wet with rain, his legs are mudded, and, above all his constitution is temporarily lowered by his exertions. A stable in these circumstances is therefore a very dangerous place, and it is there that he contracts most of his chills. Of course, if heavily sweated in the field, and he is left for a long time standing exposed to cold and wet, he may take a chill, but commonly the stable is the danger spot.

The danger of poisoning from vitiated air has been held up to encourage ventilation, and scientific people talk about the deadly poisonous features of carbonic acid ; quite rightly, too. Air can be rendered poisonous through insufficient ventilation, but not nearly so readily as has been assumed. Far more horses are killed by draughty stables than by ill-ventilated ones. In these days, when the fetish of fresh air is carried so far that the unthinking do not recognise that a moderate circulation of air will maintain it in good purity, one sees otherwise intelligent people sitting in a railway carriage with both windows down on a cold day. Whilst the pace at which the train moves forces a blast of air of similar velocity on to them, they endure it because they have been told fresh air is the preventive and cure of all ills. Meanwhile, they are chilled, and become a ready prey to disease. To say a word against fresh air is at present a heresy ; fresh air is good, but if a blast continually blows on man or animal, when he cannot take exercise to counteract it, then it is most dangerous, because it lowers animal vitality. All animals are better for a gentle circulation of air about them, but not a chilling blast. The fact is, it has been shown that until the air is impregnated with carbonic acid, far beyond the state which is reached in any but the most cramped stables from which air is absolutely excluded, there is not a poisonous effect. The question is too big a one to enter into here, but it is recognised by the most enlightened scientists, and it was demonstrated at the meeting of the British Association at Birmingham.

When we come to look back on our experience with horses and stables, do we not see some support of this ? All the theory that was regarded as a scientific certainty has been proved to be unscientific, at any rate in degree. The ordinary carter or horsekeeper did not care what the scientific ones told him ; he found that if he brought his horses sweating after heavy work into a windy stable they caught chills, and that chills lead to other ills and losses. He had such a dread of chills that doubtless he did too effectually seal out the fresh air sometimes. There was much more reason for his action than for the scientist who advocated fresh air at any cost, but who hedged himself by advising ventilation without draught. By all means have ventilation without draught, when you have solved the problem of how to get it. The so-called ignorant stable-man meant to get rid of draught at any cost. Probably, ill-fitting doors and windows defeated him to some extent, so that the air was not as impure as it might have been; thus he may have chanced upon the condition which in a few years will commonly be accepted as best. He knew that if a sweating horse stood in a draught it was liable to catch a chill. By all means let in enough air to keep the air circulating. Heavy-coated horses suffer most from chills because of the large quantity of moisture that has to be evaporated from the coats. If stables smell foul, it is because the floor is not kept sweet, though all animals give off certain smells, but they are not necessarily injurious; it is rather a matter of unpleasantness and not excess of carbonic acid gas. In summer plenty of cool air is needed to cool heated stables.—" W. J. M." in *Live Stock Journal.*

Cabbage Cultivation.—For lambs in the autumn, for young stock in the yards, and for milch cows there is no more useful crop than the cabbage. No crop, moreover, responds more readily to generous treatment with farmyard and artificial manures, and a general good management as to tillage. The plants may be raised in seed-beds sown in the autumn and late winter, or drilled where they are to stand in the spring.

The seed-bed should be prepared in the autumn by the land being cleaned, manured, and well dug. Three or four ounces of seed should be sown on each square perch of the prepared nursery, well raked in, and then a peck of soot sown over each rod. A cabbage nursery cannot be too good, nor can too much care be taken to have strong plants by thinning carefully. The plants thinned out may be transplanted, or, as it is termed, pricked out, in prepared beds. This treatment applies equally to seed-beds made in the autumn or early in the following year. The drumhead cabbage is the best variety for sowing at that season.

The land should be prepared in the autumn as for mangels—that is, deeply ploughed, well scarified and harrowed. If it be intended that the crop be grown on the flat, then from fifteen to twenty loads of rotten dung should be ploughed under. Cabbages are, however, grown to the best perfection on the ridge. These ridges should be at least 2 feet apart, and as deep as the land will allow, and may be split during the winter as weather permits. In laying out land for cabbage cultivation, it is advisable that the plot of ground be as nearly square as is convenient. The reason for this will be apparent later on when the question of horse hoeing is considered. The ridges may be dunged (fifteen to twenty loads per acre) as opportunity occurs and as the condition of earth allows.

It is always advisable to get this work done long enough before planting season to allow the ridges to collect moisture. The manure should be carefully placed well in the bottom of the ridge, so that repeated horse hoeings may not disturb it. It should be ploughed in at once before it may become dry, for in such condition it does not cover in well.

April is the earliest date for planting out the earliest-sown cabbages. The ridges should have been lightly harrowed, and, if necessary, made up again with the moulding plough; then either levelled again with harrows turned upside down, or, better still, if the land is in a nice condition, rolled down with a light roll.

Before planting commences the lines for the plants should be marked out with a drill drawn lengthways along the ridges, and then again across; the cabbages 2 feet apart, or exactly the width of the ridges. In this way the plants will be equidistant each way. Planting needs to be done with some care. Iron-shod dibbers may be used, the men using them driving each one straight down, then inserting the plant, which should be in the ground just up to the neck or first leaf. The plant may then be fastened by the dibber being driven in at an angle from the plant and then pressed towards it. A good hand will make the plant fast with two strokes of the dibber. It is very essential that the plant should stand up straight at starting, or, if it incline at all, it should be from the south, as it will be sure to draw that way eventually. Sometimes the plants are made fast with the heel of boot; but this is not altogether desirable, as, if the land is at all wet, a solid patch is left, which interferes with aeration. Boys or women go in front of the planters and drop a plant just where needed. The work is not expensive.

An alternative plan is to drill the cabbage seed in April where they are to remain. This system saves the necessity of transplanting, which is at all seasons attended with some uncertainty, and in summer can only be performed in or immediately after rain, and in case of drought must be postponed till a good crop may be unattainable. They should, in the drill system, follow some hoeing or cleansing crop, such as turnips, a previous crop of potatoes, beans or peas. Supposing the crop to have been turnips, the land would have been ploughed, on the earliest occasion after the crop was consumed, into such ridges as are intended for the cabbage seed. If any of the other crops preceded, this ploughing should have been given before the Christmas frosts. Into the furrows the dung (20 loads per acre), should be laid in March, and the ridges reversed directly, covering up the manure, and forming new ridges.

They should then be left ten or twelve days to the influence of the atmosphere. In that state they lie sound, even though soaked with rain. When it is intended to drill, harrowing should precede, or it may be omitted if the land is very friable and in fine order, as the roller to which the drill is attached will level the crown sufficiently, and they should not be reduced too much. The plants may be thinned out to the desired distance when large enough.

As soon as the plants are thoroughly established the first hand-hoeing may be performed. It should be given only to the tops of the ridges, 8 inches or 9 inches around the plants. The weeds should be cut up clean, and loose mould drawn to the stems of the plants. In about ten days after, the horse-hoe may come into use. This should be a light single-rowed hoe, such as can be drawn by a strong pony or cob, which will walk closer than a heavy horse, and not be so likely to trample down the plants. This horse-hoe will cut through all the ground untouched by the hand-hoe, and now will be seen the advantage, previously hinted at, of planting the cabbages equal distance every way, and the plot as square as possible, for the horse-hoe may be passed through the plants in at least three different directions. After this operation the horse-hoe or plough may be passed down the rows, and a furrow turned from the plants, throwing up a ridge of earth in the middle of each interval. This operation will be of great use ; it lets the atmosphere into the ridges on which the plants stand, and consequently sweetens and ameliorates the soil, and it kills the weeds that grow on the sides of the ridges much more cheaply than can be done by the hand-hoe ; it likewise pulverises the earth so taken away, and brings it into fine order for being returned to the plants later on in June, when they will strike into it and thrive the more. This is work that requires to be done with care and judgment, for if the plants are left in too small a space, and the sun be powerful, they will suffer. The strip of earth they stand on should be 9 inches wide, and if the weather be very hot a furrow may be turned back again, at least on one side, as soon as may be. The 9 inch space the plants stand on may, if necessary, be hand-hoed again, and the horse-hoe again drawn through the spaces. The hoe should have three shares or blades, the middle one set low to cut through the bottom of the furrow, and the other two set higher to cut through the sides. As a final operation, the mould-board plough may be used to sweep out the furrows and round up the ridges.

No mention has been made of watering, but should occasion call for it (although if the foregoing remarks are attended to there will not be much need) this should be done in the evening when the sun is low or much benefit will be lost. A pinch of nitrate of soda to each or any plant that appears failing will be of great good, and this may be repeated from time to time round the roots, not touching the leaves.—" NORTHANTS " in *Agricultural Gazette.*

Turkey Breeding.—Looking back, there has been nothing within the last quarter of a century quite so steadily progressive as the turkey-breeding industry in this country. Nowadays everybody, from the workman upwards, wants a turkey towards the end of the year. To cope with the increased demand, turkey-breeding has tremendously increased all over the world, but, owing to the larger demand for them on the Continent, not so many are imported as formerly. America can supply none, as they want all they have for themselves. It is, therefore, " up " to the English farmer, and the Scotch and Irish, to supply the demand.

Turkeys are essentially a farmer's stock, for they need plenty of space, but given a certain amount of care in the selection of the birds and the rearing of the poults, and the farmer will find them profitable. It must, however, not be forgotten that the turkey, though closely allied to the domestic fowl, has its own idiosyncrasies, and cannot be reared quite on the same lines.

Compared with the domestic fowl it is a comparatively recent comer among us. Julius Cæsar is vaguely supposed to have imported the Dorking; the turkey, indigenous to the new world, did not reach this country till many years after the discovery of America by the Spaniards. Towards the end of the sixteenth century it began to be known among us, and Tusser, a minor poet, whose period of literary activity just preceded Shakespeare's, writes in 1573 :—

> "Beef, mutton, and pork, shred pies of the best,
> Pig, veal, goose, and capon, and turkey well drest."

Malvolio in " Twelfth Night " is compared to a turkey cock, but right up to the mid-Victorian era turkeys were the luxury of the rich. For one reason, it was not found easy to rear them. In the early editions of Lewis Wright's " Poultry Book," long the standard work, the delicacy of the poults was much insisted upon. It is true they need more attention than ordinary chickens, but they can be reared with quite as small a death rate, and, once past the critical period of between two and three months old, they are wonderfully hardy and demand no special care.

Formerly most of the turkeys reared in this country came from the Eastern Counties. Norfolk was the headquarters of the turkey-breeding industry, and it flowed over into Suffolk, Cambridgeshire and Lincolnshire, but now we find them in every county, from Cornwall to the north of Scotland, and Ireland sends us a number of turkeys for our Christmas markets. Not all parts are equally suitable for turkey breeding, but they can be acclimatised almost everywhere, though it needs patience and care. On a light soil fairly sheltered from the cold winds they do best, but hardly any farmer would find it hopeless to add turkeys to his live stock.

There used formerly to be a demand for extra big turkeys, but these no longer fetch the high prices they did. A 40lb. turkey is worth five pounds, but such birds are very rare. Yet in their wild state, in the forests of North America, turkeys weighing 60lb. have been shot—a weight unattainable to-day. Domestication has reduced the size of the turkey—a weight of 12 to 18lbs. is the most saleable size for the Christmas market. The Italian turkeys which used to be largely imported into this country, were in some cases no bigger than Dorking fowls, but how greatly breeds vary in size is shown by giving the standard weights for the different varieties :

	MALES.	FEMALES.
Norfolks	20 to 22 lb.	12 to 14 lb.
Whites	16 ,, 26 ,,	10 ,, 16 ,,
Cambridge Bronze	18 ,, 24 ,,	12 ,, 16 ,,
American Bronze	22 ,, 34 ,,	14 ,, 18 ,,
Narragansett	20 ,, 25 ,,	14 ,, 18 ,,

Of late there has been a large increase in the number of white turkeys bred. The hens are good layers as a rule, and this makes them valuable for stock ; the size of the birds, too, is just about what is wanted. Whites originated as sports from the darker varieties. They have long been a distinct breed, and are sometimes called Austrian Whites.

Norfolks are the premier English breed of turkeys, but it is doubtful if any pure strains exist ; all have been crossed with the American bronze. This bird has certainly been the salvation of our turkeys. Breeders in the Eastern Counties were inbreeding too much and crowding their birds on stale ground. The death rate grew heavier and heavier. With the introduction of the much-needed new blood, Norfolks took a new lease of life. Cambridge Bronze never were anything but an offshoot of the American Bronze imported long ago. The American Bronze has taken kindly to our climate, and fine specimens can be seen at the Poultry Show at Islington in December (dead), or at the Crystal Palace in November (alive). But the majority of our turkey breeders use, more or less crossbred birds; stock turkeys, half Norfolk, half American Bronze, are the commonest of all.

Mention has been made how the turkey varies in size. The turkey hen varies equally as a layer. What the record is I do not know, but I believe there are authenticated cases of hens laying 80 eggs in the year. At the other end of the scale there are hens that do not lay a dozen eggs in the year. To anyone starting turkey keeping first-class stock is all-important: they cost no more to feed. Of course turkeys would never pay as layers for the table; but the eggs laid out of season being useless for setting can therefore be sold for cooking. The turkey is a slow-growing bird, and only the eggs laid in spring are worth incubating; any laid very early may produce poults, but the cold winds of early spring are almost sure to kill them; again, if eggs are incubated late in the season, the poults are only half grown when the winter comes and the growth is checked. It is, however, impossible to lay down an exact date either for starting or ending the turkey incubating season.—C. D. Leslie in *Live Stock Journal Almanac*.

Sheep on Roots.—The fattening of sheep on an extensive scale in winter naturally belongs to the lighter land districts where the animals can be kept on arable land. On heavier land they poach so much that the land is injured, and the sheep cannot get sufficiently dry lair. In wet seasons they have to be taken off the arable land so frequently that regular treatment becomes almost impossible. It is true there are districts where quite a considerable number are fattened on grass to which additional food is carried, but relatively the number is small. On the chalk downs, which are given up so much to sheep raising, owners concentrate their attention so closely on breeding that proportionately there is little fattening. As is usual where there is a big industry of any kind, there the best methods obtain.

The object in feeding off roots where many are grown is by no means to get the sheep fattened and sold as quickly as possible. The root crop is the raw material which has to be converted into sheep. In the winter feeding districts some breed of Down is most commonly kept, so that only a small proportion of the sheep are two-toothed. Lambs, or as they are commonly called by Michaelmas, hogs or tegs—that is, sheep which carry the natural lock with the tag end not cut by shearing—are put to roots in autumn to be fattened sometime before May. The most forward come out by Christmas, a second draft by February, and the last draft, with the clearing of the root crop, in April or early May. Lambs or tegs going on to roots would fatten out at very small weights if made to feed as rapidly as possible, and as they have a great tendency to grow, the extra cake and corn required to get them fat would not be repaid. The root crop provides the bulky growing food, developing a big frame on which the meat can be laid quickly when desired. Some little dry food is necessary beyond the roots for the best results to be obtained, and this may take the form of cake, though, in view of the large quantity of roots consumed, hay, or some chaff or chop of oat straw, clover seed haulm, pea haulm, or other non-expensive produce may be given. When the bulky dry food is not of a particularly tempting nature, it is better for it to be chopped, and for some meal with a trace of fenugreek to be mixed with it. Unless this is done the tegs will be slow in taking to dry food, and should a spell of cold weather set in so that they have to rely mainly on frozen roots, it is difficult to make them consume as much dry food as they need. It is not of much use to mix nubbly bits of cake among chaff, as the sheep pick them out and leave the fodder. They cannot pick out the meal mixed in with the chaff, so they have to consume all.

At the commencement of autumn it is a common practice to start the forward tegs on ½ lb. of linseed cake per day; the second lot with ¼ lb.; and the most backward with none, relying entirely on a little dry food, but what is done is mainly regulated by the forwardness in condition and the prospect of the root supply holding out. Naturally, if the root crop is short, and it is desired to run the usual number of sheep, they must be forced. The increase of the cake or corn supply is regulated by the thriving. An experienced farmer will be able to see when the first draft is likely to come to the butcher, and he feeds accordingly. If they fatten quickly, he pushes on the second draft a little faster, so that they will come into first place in proper condition to be put on a safe feeding ration. Generally, when the middle draft is promoted to more cake, the third draft gets a slight increase, though not invariably. Sheep thrive very varyingly from year to year. Sometimes the roots are better feeding than at others, or the season may be better suited to sheep on arable land, providing dry lair, and, therefore, more rest. A farmer needs not only to watch his sheep, but to constantly handle them, so that he knows what progress or retrogression they are making, for sheep are not always improving, and the reason why, and the means of making them thrive, must be discovered. There is no doubt that sheep thrive far faster when they receive sliced roots in troughs than when they have to gnaw the roots. Gnawing hard roots is very laborious to sheep, and from roots alone they get little more than a sustenance diet.

The time spent in gnawing needs to be spent in rest. If gnawing sheep do fatten it is only by the aid of liberal allowances of cake and good hay. The cost of attendance where the sheep are trough-fed is practically double that of when sheep do their own cutting. A good man will move and reset the daily fold, and do the ordinary shepherding of 400 gnawing sheep, but 200 trough-fed ones will keep an equally good man fully employed; the cost is roughly a penny per week in the one case and a halfpenny in the other. But during the fattening period, the cutting well repays itself. In wet or frosty times many roots are wasted, in the former through being trodden in and smothered with dirt, and in the latter by being frozen in and not pecked out thoroughly. Moreover, when roots are cut, it is customary to get up a big supply and safely pit them, securing in this way a month's supply, so that whilst those exposed to long, severe frosts may be destroyed, those under cover remain sound. There is decided economy in growing kohl-rabi or cabbages for autumn feeding. Both these crops stand well above ground, and are easier to gnaw in wet and dirty pens. Moreover, in respect to cabbages for sheep, no cutting is needed. When roots which bulb partly underground are frozen in, and then covered by a heavy fall of snow, it is very difficult to find them. But Kohl-rabi, being well above ground, do not present this difficulty. The hardy variety of kohl-rabi will stand the most severe frosts and be available for feeding in late January or February. Of course, in very prolonged severe winters, the mangels stored away become available when swedes cannot be got at; but after really hard winters mangels are very valuable in the spring, because other food supplies are generally exhausted. Such winters have left us for many years, though doubtless history will repeat itself, and oxen will again be roasted on the frozen Thames. When such a time comes many will find themselves very much out of gear, because they will have an absolutely new experience, having had no need to farm against zero frosts and winters when the plough cannot run for two or three months. Whilst there is a chance of such things happening some precaution is necessary to have a supply of sheep food in readiness for it.—" M " in *Live Stock Journal.*

Egg Hatching.—Incubators have come to the front so much of late years that there is some danger of the minute details, which make for success with sitting hens, being forgotten. I have not a word to say against incubators. In the hands of those who understand them they are invaluable. Neither can I endorse the statement often made that incubator-chicks are not as strong as hen-hatched. I rear by each method and can see no difference. Incubator chicks are usually reared artificially, and this in many novice and constitutionally careless hands means great mortality. Yet, if thoroughly understood, artificial rearing is easily the superior method. But on the ordinary farm the proportion of chickens to be reared to the number of hens kept is not so great that it cannot be done by the old method, more especially as there are many early broodies under modern good management.

If pullets are so fed that they lay autumn and winter eggs, they are sure to go broody in time for their work. A few years ago all the cry was for early-hatched pullets. Now, with better knowledge of the feeding and rearing of chickens, we find March, April, and even May pullets may be sufficiently matured for autumn and winter work, and that the very early ones, if reared as well as fowls should be, often commence to lay too soon in the summer, go through a moult and fail to do the most winter work. There is an erroneous idea that pullets will not sit as well as hens, but there is practically no difference except that the pullets may require a little more care in handling for the first day or two.

On a farm where it is proposed to do the hatching by hens, it will always pay to keep one pure breed for this work, whatever the laying stock may be. The workers kept merely for egg production, should be small fowls of Leghorn type, preferably first crosses; obviously of little value as sitters, although nearly all crosses go broody. The White Orpington is the best sitter, and as she, if suitably mated, say to a Faverolles cock, will produce the very best of table chickens, from the paying point of view she has a second claim upon us. And again, although not built for an ideal layer, she is quite one of the best early winter layers, and may be relied upon to go broody reasonably early. Regarded as a broody the Buff Orpington is nearly as good, but not equal all round.

The Wyandotte family sits well, but being bred for laying, few of them go broody as early as wanted. The same may be said of Rocks and Sussex, which are excellent sitters when ready. The purely table breeds, such as Games, do not as a rule start laying early enough to go broody in time and are too light-feathered. The pure Asiatics—Brahma, Cochin, Langshan—are a little too heavy and clumsy for best work, although all the best sitters have been derived from them. Fowls of the Orpington class will usually sit for six weeks and bring off two hatches, which is extremely useful when one is short of broodies. There is no cruelty in it if the hens are properly cared for.

For autumn and winter setting, fowls should certainly be brought into the building. For spring there is nothing better than to ram a depression in the turf in the shape of a nest, line it with hay, put in the hen on some trial eggs, place a coop over it with a wire run attached, and after she has taken to the nest, allow her to come off and feed in the run at will. This is the least trouble of any method, and in the hands of a novice can scarcely fail to be successful. The outhouse used as a sitting-house may be on the ground floor or in a loft. If it is light, impervious to rats, and has room for the birds to feed and for the attendant to work, that is all that is required. The boxes for nests should not be placed against a damp wall. Orange cases set on one side, with one band of the lid left on to keep the nest in, serve the purpose well. With these the hens can walk on and off. If the boxes are made of tea-chests and the like, the hens should be lifted out at the top and placed back when ready. Hens will cover more eggs in the latter kind. One large poultry-keeper of to-day says that he can do quite as well with hay and straw on the bare boards as with soil in the nests, but I have been uniformly successful with the latter method and shall continue it. A good deal depends, however, upon the way the nest is made.

When a hen breaks many eggs she is restless from some cause, possibly vermin on the body, or it may be a cramped position from a badly made nest. A layer of about three inches of loamy soil, padded well solid, with the edges slightly raised and the corners well filled up, will make an excellent nest. The oval in which the hen sits should be about 12in. by 10in. for a moderate-sized Orpington. The nest should be as nearly as possible flat, or only dished very slightly to the centre. This nest will hold sixteen to seventeen eggs; but it should not be so full of eggs that the hen cannot get her feet between them. Neglect of these details means breakages. A little well-shaken soft hay covers the soil, and the nest is ready for the trial eggs, say, three. No matter how quiet the broody may be, the full nest of eggs should not be given until she has sat for one night and settled the hay to the shape of her body. In such a tight, solid nest breakages are very rare. Whenever the hen starts to go broody, she should be allowed to remain for a day or two until the temporary fever is sufficiently established for her to bear handling. She should also be brought to the sitting house after dark.

Neglect of these two precautions is the cause of so many failing to take to the new nests, whilst, if these are observed, not one in fifty will refuse to sit. The hen can be kept in the nest by means of a shutter or even a sack weighted by bricks. By morning she is usually safe to be entrusted with the eggs. These are better quite fresh and should not be more than a week old if it can be avoided. Care must have been taken in winter to keep them at a temporature of not less than 40 deg. Everyone knows that a frosted egg is spoilt for setting, but few know that a temperature anywhere near 32 deg. is prejudicial to the germ.

There are two ways of feeding the broodies. They can be lifted off and carried outside, where they are attached by a string from the leg to a peg stuck in the turf. When required, they are released and carried back. This is the usual gamekeeper's method, and has no drawback, except that it is not suited to very cold weather and entails a loss of time in carrying the birds about. The idea is to prevent their fighting. But I prefer putting them down loose, a dozen at a time in the house. If strangers, they may fight a little the first day, but they soon settle down. The advantage is that attendant and hens are in the warmth and out of rain. The length of time for cooling the eggs varies with the temperature of the day, but may roughly be put at five minutes in the first week to ten in the last in cold weather, and double as much in a temperature of 50 deg. The hens should be dusted with pyrethrum powder when put down, and once again after about ten days.

The nests should be examined and any broken egg removed, and all made as clean as at first, even to washing the hen's breast and feet, if necessary. It is generally supposed that the food should be of a particularly dry and heating nature, but that can be overdone. A hen will remain broody on almost any food, and one of the objects to be considered is keeping the nest clean. The hen, as she only comes off once a day, should not be given too relaxing a diet. On the other hand, the effect of feeding solely upon maize makes the bird too costive, and a re-action sets in resulting in diarrhœa. Wheat, oats, maize, a little pulped swede and granulated meat or fish meal, with grit and water, is perfect feeding. On this the hens should not lose weight if they sit for six weeks.

By the seventh day, the germ will be sufficiently forward for the eggs to be tested and the unfertiles removed, but this is not imperative as is the case with incubators. Still it is better done. One of the most important things to be observed is the warm water test at the eighteenth day. The eggs should be placed in a bowl of water at 105 deg. and watched. Any that float very high out of the water and lean to one side should be removed, as in these the germ died early, and they are very likely to burst in the nest, flooding it with sulphurated hydrogen—that filthy smelling gas which is fatal to many of the live germs in the other eggs.

Of the rest, those which float upright, with the wide end of the egg out of the water, contain live chicks, unless any infertiles may have been left in, which float much the same. The live eggs, too, will jerk as the chickens move within. These which sink to the bottom may be dead chicks or merely delayed eggs from a chill, probably of little value, but not dangerous. When a dozen hens are sitting together, these may be well placed under one hen and the live chicks shared up amongst the rest. This is not the only advantage of the water test, for the moistening undoubtedly makes it easier for the chick to break out.

It is a disputed point whether the attendant should give assistance during hatching. In a naturally-made nest upon the ground the hen can be let alone, but in a sitting-house the expert will save some chickens that would otherwise have died. The caps of hatched eggs are apt to become bedded upon some still chipping, causing death to those within. The nests are better eased by taking out the dry chicks and leaving more room for the chipping eggs and damp chicks. A chicken may be too dry and attached to the membrane so that it cannot turn in the shell; in which case a little warm water poured in, with the egg turned about in all directions to moisten all within, may save the life. In doing this, the hen must be lifted off, the nest emptied and made tidy, the hen put back, pressed down into place with one hand whilst the damp chicks are placed under her with the other. The hen is quiet at once and the chipping eggs can also be given to her, or in a full sitting-house one hen can be kept nursing (preferably the quietest one) and the others covering the eggs still to hatch. The dry chicks should be wrapped in a warm flannel and kept warm by a fire or in an incubator box until the hen is ready to part with them. The observance of such details adds largely to the number of chickens reared.—GEORGE A. PALMER in *Farmer and Stockbreeder Year Book*.

Orchard Management.—In a paper recently read by Mr. H. J. Phelps to the Newent Branch of the National Farmers' Union the author said:—With respect to fruit cultivation in grass orchards, whilst we are all willing to admit we can grow better fruit where the whole of the land is cultivated, still most of the fruit in this neighbourhood has to be grown with turf underneath.

We ought to fill up the gaps in old orchards before planting new ones; if there are sufficient good trees left it is policy to do this. If the trees are gone too far, make a clear sweep of them and start afresh. The young trees planted in the old orchards, require, I admit, more attention, and are much more difficult and expensive to grow than if they were planted on fresh ground. Our forefathers planted the orchards on the best sites on the farm, and it is better to keep them there and plant as many new trees as possible. If in old orchards the vacant places caused by trees decaying were kept filled up each year, it would not be a big expense; but when old orchards are neglected for years and never a tree planted to make them good, it becomes a big outlay and expense for both landlord and tenant.

In laying out new orchards it is better to plant trees in a triangle and not on the square. You get more trees on the same ground and it gives them just as much room. Ten yards apart is a good distance. Be careful to get the first row correct, and then it is easy to complete the arrangement of the trees.

In Digging the Holes, it is not a good plan to dig more during the day than can be planted, especially on heavy soil. Should it rain the soil that has been turned out becomes very sticky, and cannot be properly trodden round the tree as it is planted. On heavy land it is very necessary for this precaution to be taken for there is the further risk of the holes becoming filled with water. The holes should be not less than 4 feet in diameter, preferably 5 feet. The turf should be first taken off, and then the surface soil to the depth of a foot turned out; the sub-soil in the hole should be dug to another good spade deep, the turf put back well chopped, and the tree planted on the turf, with a little fresh-carted old manure and soil. Fresh manure must not be used, for many trees have been killed by doing so.

The difference in growth between trees planted on the turf chopped in the hole and those where it has been put back around the tree on the surface is marked. Where there is no turf you can cultivate around the tree until it will do without a fence, for by this time the roots will have spread out some distance. Then allow the grass to grow. A little manure added at intervals will greatly benefit the trees.

There is not much difference in the cost between a really good tree and an indifferent one, but there may be many years' difference between the two coming into profitable bearing. Before planting, carefully prune the roots, cutting back the strong roots a little and all damaged parts. The head should not be cut back until the second year. By leaving it, the tree gets better established at the roots, and the subsequent growth is much stronger than if the tree is pruned at the time of planting. In the second and third years cut back the head, letting 6 to 8 inches remain of each year's growth. After this only cut off what is not required to form a nicely shaped head, and continue this each year. The trees should only be allowed to grow a few apples for three or four years, otherwise it will be detrimental to the ultimate growth of the tree.

Fencing Trees.—First the stake should be put in before the tree is planted. I advise using creosoted stakes about 2½in. square and 8 feet long. These will often last two or three lots of trees. The trees are made secure to them. Generally, bagging and tar twine is used to tie the tree to the stake. This is very bad stuff to use for many reasons. The bagging rots, and the tar twine cuts the bark of the trees; the bagging keeps wet; underneath it will be found a lot of scale; it is a harbour for insects, and you cannot get the spray underneath it. As a substitute, I am at present trying old bicycle tyres cut in strips, doubled, put round the tree, and each end brought back and fastened to the stake. The new binding gives no harbour underneath for insect life; it is soft for the tree to rub against, it will dry quickly; spray will run down between the rubber and the tree; and the rubber will expand as the tree grows. I think it will last longer than bagging and tar twine, but even if it does not last so long, I think it is better.

With regard to the best fence, having had some experience with several kinds of fencing, I, personally, prefer the wire guards; they are simple, and least costly, are easily opened to clear out the weeds, and are very little trouble to put up. At the top of the wire guards the wire stands erect; bend it down, or the keen edges will injure the tree, especially in the event of wind, or should the tree come unfastened from the stake. I have seen trees entirely spoilt in this way. It is also a good plan to fasten the wire guard to the stake by means of a little staple, but you want to be careful to keep the guards well on the ground, and to watch that the soil is not sinking away from the guard and allowing rabbits to get underneath to the tree.

I must just briefly refer to general cultivation and pruning. On a farm there are seasons for preparing for our next year's crops. We chain harrow, and roll our meadows, and our orchards should not be neglected—in fact, should come first. They require as much chain harrowing and rolling as the rest of the pastures, or even more, and may be done twice over with both harrow and roll. The better turf we can get the better fruit we shall grow.

As regards pruning, many people make a point of clearing out the centres of trees and trim off all the growth along the main branches, in other words, take off all the spurs. If this is fruiting wood I prefer to leave it and cut where boughs are rubbing each other. Make every branch independent of another, and cut away all injured parts, and any canker. You cannot make any hard-and-fast rule with regard to pruning trees, different varieties have different habits of growth and must be pruned accordingly. I try to impress upon my men that when picking fruit they can learn how trees should be pruned to produce the most quantity and best quality fruit by noticing the condition of the fruit as they pick it. In the case of very old trees not much can be done but to cut away the old, dead wood, and in the case of young trees just going over them every year makes the work much lighter. A saw should not be used for pruning except when cutting out the dead wood from old trees. If branches are too large to cut with a chisel, then after using the saw, chisel off so that the wet will run down. This cut will heal over quickly. Cut back close to the main branches, so as not to allow shoots to grow between what is left and the main branch. To grow fruit to perfection, eight seasons out of ten the spraying of fruit trees should be as general as hop washing. I also like lime. It cleans the tree (by so doing adds to its life) causes much quicker growth, and kills all insects that are in possession at the time. I am afraid we are neglecting to plant cider fruit trees, and there is sure to be a scarcity after a time. It is a good plan sometimes to do what other people are not doing.

Do not plant too many varieties. If you have on your farm one of the best varieties doing well then you cannot plant too many of that variety, and by doing so, even when the trees are small and yielding but little fruit, you will have sufficient to sell; but, if split up into several sorts, you would find them difficult to market, and not realise much.

It seems to me more encouragement should be given by the owners of land to fruit cultivation generally, and I fail to see why this cannot be done to the advantage of both landlord and tenant. There is nothing grown upon a farm which requires so much care and expense for so many years with practically no return as a young tree, and the time during which it is not returning anything is the most expensive if it is to produce satisfactory results afterwards. In some cases, the landlord finds the trees and the material for fencing, and this is as much as you can expect him to do, the tenant doing all the work. But the question is often raised, Why should the tenant do all this work without knowing whether he or his family will reap some benefit from his outlay? I think this is quite a reasonable question. The difficulty, in my opinion, should not be allowed to exist; yet it is one of the principal reasons that is keeping the tenant farmer from extending the fruit-growing industry in this country. We want security and compensation (in case of death or disturbance) for planting young trees and treating them as they should be treated. And the landlord should be able to claim for neglect to those trees if they are not properly looked after.

Fruit cultivation should be encouraged. There is a growing demand for our best apples and pears, and as the population of our Colonies increases they will require more for their own consumption. The medical fraternity strongly recommend apples, and certainly there is no finer or more useful fruit grown in the world than the English apple.

Soft Food for Poultry.—When the keeping of poultry was but little understood, one attraction in keeping fowls was to use up the waste pieces from the house and turn what would otherwise have been wasted into delicacies for the table in the form of eggs, but now it is often stated that all-grain feeding is preferable. This we cannot endorse. It costs more, and the birds do not give nearly as good results as when fed on a nourishing feed of soft food in the morning. with a sprinkling of grain at mid-day to keep them scratching, and corn for their last feed in the evening.

Soft food in the morning is more beneficial to fowls because hard corn takes a certain time to soak in the gizzard, but the soft meal passes into the system immediately, and the fowl is nourished at once, so that no time is lost, and the flesh or eggs are produced with much less exertion than if hard corn were given.

The morning soft food should consist of good biscuit meal and middlings, or house scraps and middlings, with a little bran, varied now and then with ground oats and middlings, or with a little meat added.

Hot water should always be used for mixing the meal—hot skim milk, where it can be obtained, is better—and during the colder months the food should be given hot. Care should be taken not to make the food wet or sloppy, for when it is sticky and clings to their beaks the fowls do not relish it.

House scraps should always be utilised for the fowls. These should be kept in a bowl as they are collected during the day, and next morning should be boiled up in a saucepan, specially reserved for the purpose, the scraps being covered with water. When well boiled they should be turned into the mixing-tub, and mixed with the biscuit meal (which should have been previously scalded with boiling water). and dry middlings added to make the whole a crumbly mass of nutritious food.

This is a most economical as well as an excellent breakfast for fowls, and when the house scraps are not enough for all, then extra biscuit meal should be given. The cost of this feeding is repaid by the birds recommencing to lay at a much earlier time than they otherwise would. One point must always be remembered in connection with hens and that is, that unless the egg organs are kept operative by a supply of good food and judicious use of poultry powder, they are apt to become unprofitable for months, for birds which are fed casually on any food available fall into a lethargic and frequently unhealthy condition, and do not recommence laying until the summer, which is undoubtedly the natural time for the fowls to lay.

That the system of supplying the necessary nourishment to keep the egg organs active, and at the same time to supply the birds with material to make up for the drain on their systems in making new feathers, is not injurious, we have proved year after year. By always taking care to breed from good layers, which are the only fowls that pay for management and nutritious feeding, the birds raised, and the eggs also, increase in size year by year.

When hens stop laying, or are not doing well, some poultry powder should at once be given for about a week, as this pulls them round, and they recommence laying almost at once, provided they are healthy.

When the colder weather sets in, it is a very good plan to drive the birds back into the house for three or four hours after the warm meal, if they have no covered run, and at 12 o'clock a handful or two of grain should be scattered in the moss peat on the floor; this being raked over to keep it light and in good order for the birds to scratch it.

After the first few mornings there will be little trouble in driving the birds in, as they get accustomed to it, and they will run into the house again as soon as they have finished their breakfast. They should be fastened in with a wire door, so that light and air may enter, and the place should be made and kept comfortable, the wooden door being left wide open.

The better plan, however, is to have attached to every house a covered run, where the fowls may run and shelter from wind and weather, and get plenty of scratching exercise. In the covered runs they should be fed, and so be protected from the cold winds, which are likely to do them great harm on cold and windy mornings.

The grain for evening feed should be good wheat one night and best clipped oats the next, and so on alternately. Sharp flint grit and ground oyster shells should be provided for the fowls in every run, and in the soft food on alternate days flint dust should be sprinkled, for this is most valuable to moulting hens as well as laying pullets.

When the feathers begin to grow the amount of nutriment that goes to form quill and fluff is considerable, and constitutes a drain upon the system which has to be reckoned with, so that care should be taken to make up for this loss by supplying the birds with the best food obtainable.

The number of eggs produced and the strength of any offspring will depend very largely upon the amount of care taken with the birds at this period.

Many people object to giving fowls anything to help them through their moult, saying it is unnatural, but it should be remembered that while the birds formerly only produced two or three eggs a day they now lay twenty to twenty-five eggs, while remaining in the best of health.

It is well for poultry-keepers to bear in mind how narrow the distinction is between things that succeed and things that do not, and, as a laying hen is an active hen, the birds are altogether better when laying than when standing about huddled up.—*Mark Lane Express.*

The Farmer's Library.

NOTES AND REVIEWS OF NEW BOOKS.

1.—*British and Colonial Dairying.* By G. SUTHERLAND THOMSON, London: Crosby, Lockwood & Sons. 9s.

The author of this work throws down the glove and challenges his enemy in the opening words of his preface, when he states that his aim is " to correct errors which are preventing a healthy development of important phases of the Dairying Industry." He continues, " Dairying and Dairy Farming have been seriously handicapped through the faulty recognition of practical and commercial subjects that are inseparable from success." " In Britain there is an inclination to give too much attention to theoretical instruction and to underestimate the value of practice."

Such is the indictment which the Author brings against Dairying.

No one would dare to start a work intended for sale in this country with such expressions of opinion who had not gained his experience in other countries, and not merely as an onlooker but also as a worker. It is because the Author has evidently had very exceptional experience of Dairying in our Colonies and abroad that he appears to see faults in our Dairy Industry which are not visible to people who have been brought up among these faults. But the faults which the author draws attention to are not always on the part of those engaged in Dairying. Take, for example, the subject of a purer milk supply, which has of late been so much to the front. There are many people who think and write as if the whole of the blame for not supplying a purer milk to consumers in the towns rested on the dairy farmers' shoulders. Not so the author, he attempts to point out " where reforms are necessary," and says:

> " To establish the milk supply on a sound and satisfactory basis, it is imperative to correct its source, and to eliminate dangers that exist after the product leaves the hands of the farmer. To say that machinery and scientific practices will give the desired result is a remedy in disguise.
>
> " Defects in milk may correctly be brought under two classes namely, those beyond the farmer's control, and those over

which he has control. Let us deal with the former under the following headings:—

1. Defective State education.
2. Want of encouragement to farmers.
3. Faulty dairy buildings.
4. Unsuitable sites.
5. Bad equipment.
6. Want of capital.
7. Defective cans and transport dangers.
8. Carelessness of householders.
9. Restaurant dangers.
10. Injurious permanent water supply.
11. Faults in the retailing and storage of milk."

In considering these headings seriatim the author makes remarks from which we cull the following:—

"1.—Defective State Education.—The milk supply of any country will not be remodelled and made satisfactory by an Act of Parliament that indirectly bestows the administration upon the medical and veterinary professions.

"2.—Want of Encouragement.—No business receives less encouragement from the community than the business of the dairy farm. The public pay only one price for household milk, and for butter, cheese, and other foods they pay on a basis of quality. It, therefore, follows that the milk producer is not in the least encouraged to raise the quality and purity of his supply.

"3.—Faulty Buildings.—Defective construction and bad ventilation of buildings greatly increase the dangers of milk contamination.

"4.—Unsuitable Sites.—Bad situations of buildings in quite a number of cases are responsible for sanitary defects, and they increase the difficulties of a healthy milk production.

"5.—Bad Equipment.—There is what might be termed the landlord and tenants' equipment, the former being fixtures.

"6.—Want of Capital.—The absence of State banks prevents enterprising and intelligent men from effecting improvements in the equipment of their farms, and adopting modern practices essential to success. From experience of this invaluable aid to dairy farming the writer can say that its introduction in England, or any dairying country, on a practical and thoroughly helpful basis, would stimulate the industry, and remove from many deserving farmers the barrier that separates them from the goal of their business lives.

"7.—Defective Cans and Transport Dangers.—Contractors for milk should be compelled to provide seamless churns, and to keep them in thorough repair for the conveyance of milk; also the cans should be effectively sealed, and under careful Government inspection.

"8.—Carelessness of Householders.—Experience has shown that the contamination of milk with pathogenic bacteria, including the tubercle bacilli, can be traced to the carelessness of milk consumers. If an inquiry were conducted into the way milk is kept and treated by the average householder, startling revelations would follow.

Open vessels containing the household supply are too frequently 'stored' in insanitary rooms, sick chambers, and in unhealthy cupboards.

"9.—Restaurant Dangers.—Milk in considerable quantity is retailed by restaurants at railway stations, and other centres in Britain.

"10.—Injurious Permanent Water Supply.—Impure water for drinking purposes (of cows) will reduce the keeping properties of milk considerably.

"11.—Faults in the Retailing and Storing of Milk.—The handling of milk by wholesale and retail depots . . . . . . should be placed on a secure basis.

"The storage of milk is a feature of our subject which necessitates strict attention, and if not carried out in accordance with the demands of science and practice, serious results may follow. On no account should milk be kept in cool storage until acid is perceptible. When milk of this quality is retailed, deterioration is very rapid, and it becomes a dangerous product to health."

As regards the conditions which affect the quality of milk, there is one point which the author seems to have overlooked, and that is the importance of equal times between the milkings. Unfortunately in this country, the desire to have warm milk from the cow in some places, and the exigencies of the railway companies in others, necessitate the cows being milked at very unequal periods, sometimes of even eight and sixteen hours respectively, with the inevitable result that the morning's milk contains less than 3 per cent. fat, and the producer, should a sample be taken, is prosecuted.

The author deals with the production of cream and butter both in a small way and under factory conditions. He has a few words to say about margarine, and points out how rapidly the consumption of this substance is increasing, while the consumption of butter is gradually declining. This he attributes "to the marked irregularity in the general quality of butter," and the fact that price and quality do not coincide.

Dairy cattle, foods, and diseases of cattle next receive attention, and the author's wide experience in other countries enables him to make some suggestions of a novel character, especially with respect to the much dreaded foot and mouth disease.

Passing on to the subject of dairy instruction, he is rather severe upon present methods, and almost seems to accept a statement which he quotes about Public School instruction, "that 20 per cent. of it is dangerous and 20 per cent. useless," as applying with equal force to dairy instruction. From commencement to end the writer of this book is fearless in his criticisms. The chief fault we have to find with the book is want of system. But even this fault makes the book more readable than it might be were it arranged more in the form of a text book. Its chief value is the very fact that it is not a text book, and is free from the great fault of most text books, namely, that they are largely compiled from the works of others. Not so this book; it is a record of the knowledge and thought of an untiring worker of very wide experience, and its chief value lies therein. The facts will be of value to all working at, or interested in, the dairy industry, either at home or in our Colonies, and the views of the author, whether we agree with them or not, must give rise to a new and fresh interest in many old problems. One of these thoughts has come into our minds often enough when travelling abroad, it is as follows :—

> "If Britain only knew how well her travellers and merchandise would be received in some countries abroad, she would wake up, and not allow her commercial rivals to enjoy a rich harvest without exertion. In every foreign capital commercial Britain should be strongly represented by well qualified officials, who would be the servants of all, and whose duty would be to make the manufactures of Britain that are in greatest demand better known to the native population."

We cannot conclude this notice without referring to the excellent way in which the book is printed and the photographs reproduced. These numerous, and in some cases quite remarkable, illustrations, bring home forcibly to readers the facts referred to by the author.

2.—*Dairy Technology.* By C. LARSEN and WM. WHITE. London: Chapman & Hall. 6s.

This book, which is published in America as well as in England, is written by two Americans, the first being Professor of Dairy History at South Dakota, and the second Dairy Instructor in Kansas. To the average Englishman interested in dairying, the facts it contains will be a revelation. In England, dairy farmers have been content to produce milk either for sale or for conversion into butter or cheese. The bye-products of the dairy—skim-milk, and, subsequently separated milk—have been used either as food for man or calves, while the bye-product of the cheese-maker—whey—has been used for feeding pigs. Such, till within quite recent times, was the whole experience of English dairymen. Dairy technology did not exist.

But a great change has gradually come over the dairy industry; a change which has been more rapid and more complete in other countries than in England. This book deals with some of the results of this change, and describes the modern growth of industries dealing with milk and its bye-products. The great improvement in the supply of milk to cities and large towns, an improvement which has affected the dairy farmer as well as the dairyman, has been carried much further in America than here, and "certified milk" appears there to be growing in importance. Certified milk may be said to be milk which has been produced under such conditions, and treated in such a manner, that its purity and cleanliness can be certified. Pasteurised milk is very largely used abroad, but has not met with much favour in England, although its production and sale appear to be augmenting slowly. The authors deal fully with the production of these articles and describe the plant, *i.e.*, machinery and appliances, required for their production. Then follows a full description of the manufacture of ice cream, an industry in America the size of which we can scarcely realise. Thus Mr. J. Gordon in an address to the Ice Cream Makers' Association, said, "the value of the ice cream consumed in this country has reached the enormous figure of 150,000,000 dollars (£30,000,000) per annum."

Still another industry which has arisen out of milk, and more especially out of the necessity to utilise separated milk, and, one of which we in England know very little, is the manufacture of casein. This is carried out not only in America; for on the Continent of Europe the manufacture of casein has also become an important industry. The casein is made out of separated milk, and its manufacture has helped to solve what was a few years ago a burning question, "how to utilise Separated milk?" The substance thus produced forms the basis of many of the concentrated foods now so largely advertised and used by invalids. It serves in addition, many technical purposes, being employed in the manufacture of paint, glue, paper, and dress materials, and for producing imitation ivory, etc.

Lastly, we have had of late years that new and rapidly growing industry of dried milk, or milk powder. In the ten years which have elapsed since Just and Hatmaker introduced their desiccating machine and made the production of milk powder a possibility, great improvements have taken place, and many of the drawbacks possessed by the first milk powders have been diminished if not entirely got rid of. Dairy farmers in England are apt to think that the production of new milk is an industry with which the foreigner cannot compete. They are mistaken. The foreigner is competing with it already, and every year to a rapidly increasing extent, by the introduction of milk powder. This powder is re-converted into milk in the large cities and takes the place of the new milk, which formerly was, and had to be, produced by the dairy farmer at home.

Such, amongst many others, are the principal technical applications of milk and its products which are treated in this work. Those who are interested in the dairy industry will find much matter for thought in its 300 pages, which contain, so far as we are aware, the only explanation of modern dairy technology in the English language.

3.—*The Vegetable Proteins.* By T. B. OSBORNE, Ph.D. London: Longmans, Green & Co. 3s. 6d.

The term proteins used formerly to be applied to those compounds which are to-day more commonly known as albuminoids. Such is the term now applied to the nitrogenous constituents of plants, and this term is familiar to all those who take an interest in the composition of crops or of the artificial feeding stuffs which are so largely used as foods for cattle. Hence it will surprise many to learn from the author that "no representatives have yet been found in the plant of the albuminoids." Those protein substances which are present in plants consist mainly of "albumins," which are soluble in water and very similar to the albumin of an egg, of "globulins" which are insoluble in water but soluble in saline solutions, and of compounds soluble in alcohol. There is also in wheat a protein which does not belong to any of the three preceding groups and is known as glutelin. But these are only a few of the many proteins which have been found in vegetables and this " Monograph " gives a complete account of the various substances now known, their history, and the literature relating to them. This valuable work is one of a series on Bio-Chemistry, many of which, while useful to those who study the science of agriculture, are only suitable for those who have had a good training in chemistry. What is probably the most interesting work of the series to farmers, that by Dr. Russell on " Soil Conditions and Plant Growth," we drew attention to in the last volume of the " Journal."

4.—*The Farmer of To-morrow.* By F. J. ANDERSON. London: Macmillan & Co.

Whatever may be the opinion of those who will take the trouble to read this book, one thing is certain, they will find in it much matter for consideration. The views expressed are exceptional and raise some interesting problems, for the author goes off the beaten track and puts forward views which are extremely heterodox at the present day. He is well aware of this, in fact his object in writing this book seems to have been to induce his readers to consider whether we are not entirely mistaken in our present views regarding the soil. Let us try and briefly put before our readers the main points of the most interesting argument in the book. The author says :—

> " The vital question for the farmer of to-morrow, however, is not how much land there is, but how much fertility there is in the land that he possesses, or may possess. How long, in other words, at a given rate of production, will the soil continue to feed us ? "

If, he argues, the present assumption that the soil is deficient in potash and phosphoric acid be true, and the land must have these substances applied in order to maintain its fertility, then it is evident that when the stores of potash and phosphoric acid are exhausted the soil will lose its fertility. " How long then," he asks, " before the earth's crust will become a sterile waste, devoid of living things because the means for sustaining life have been consumed." If we accept this assumption, it should be just as necessary to know how much chemical plant food will be ultimately available in the form of artificial fertilisers as how much coal, iron, or gold we can extract from the earth.

But the author does not believe in the above views originally put forward by Liebig and accepted up to the present day by nearly all scientists. He holds the view that "the soil is the one indestructable asset of the nation. It is the one resource that cannot be exhausted." He recognises that his views are opposed to all accepted ideas, and must be supported. This he does by reference to history, to the customs of farmers, and to the results of many recent scientific experiments. The author is not blind to facts. He anticipates criticism and himself puts the following question: "If the farmer possesses in his fields an amount of inexhaustible manurial resources why is it that one field yields bountifully, while another does not repay the expense of seed? Some idea of the answer which he gives to this question may be gathered from the following quotation: "May be the soil is tired. "May-be the soil needs a change of occupation, just as man." "We know that fallow will restore the life of soil. Fallow is merely extending the period of rest, giving the soil more time to sleep. We also know that rotating crops, giving the soil a change of occupation, accomplishes somewhat similar results. Is fatigue in the soil a poison, just as is fatigue in man and animals?" We must leave our readers to seek in the book for the answer; as also to the riddle which the author implies if he does not actually put it. If the modern views regarding soil fertility are correct, how is it that the soils of China are the richest in the world after 4,000 years of intensive cultivation?

The work is throughout interesting and suggestive, and written by one who is not a mere dreamer or theorist but evidently a thinker conversant with his subject.

5.—*A Text Book of Agricultural Zoology.* By F. V. THEOBALD. Edinburgh: Wm. Blackwood & Sons.

Thirteen years have elapsed since we drew attention to the first edition of this work, and during that time considerable advance has been made in the subject of economic zoology. The result is that in the present edition many alterations have had to be made and a considerable amount of new matter added.

Although termed Agricultural Zoology, the work is in reality an admirable text book of animal life, illustrated wherever possible by examples which affect agriculturists, and having such examples treated in full detail so as to make the work of exceptional value to those interested in farming. The work starts with the simple cell and passes rapidly in review the various lower forms of animal life until the worms are reached. Here the typical character of the book first shows itself, and we find minute descriptions given of the liver fluke, the tape worms, the round worms, etc., special reference being made to those found in sheep, cattle and horses. From the description of these soft bodied animals the author passes to a consideration of the jointed limbed animals, most of which are commonly called insects. Here we find many animals, which are unfortunately far too well known to the farmer, such as, for example, the sheep scab, and the various fleas which attack the turnip, hop, cabbage, and other crops. Later on, the moths and flies which attack so many crops both in the garden and in the farm are described. But the author is not content with a scientific description of all these animals. He realises that the great question to the farmer is what to do when his animals or his plants are suffering from an attack. Hence, wherever possible, we find the means of prevention and various remedies are carefully considered, and it is in this respect that the book differs from all ordinary works on zoology. Take, as an example, the Woolly Aphis; the author, after his description of the insect, continues :—

> " Prevention and Remedies.—We notice this disease chiefly rampant in neglected orchards, where the trees are cramped together, and the trunks and boughs covered with moss and lichens. Keeping the trees properly thinned, with plenty of room for air, and clean, will prevent much damage from this pest. All rough bark should be cleared off, and mosses and lichen destroyed by the caustic washes mentioned in the Appendix. The aphis on the trees may be killed by spraying *with force* with paraffin emulsion, or better still tobacco wash. The ground form may be kept from ascending by banding with Tanglefoot. In Australia and South Africa apples are only grafted on Northern Spy or Majetin stock; the roots of these are immune."

The appendix here referred to is one which will prove of great utility to the farmer as it gives full instructions for the prevention and destruction of insect pests, while it is preceded by another appendix which treats of the prevention of vermiceous diseases.

The second part of the book is devoted to the study of the Vertebrate animals. Special treatment is given to the horse as typical of the higher animals both as regards the skeletal and the general internal organisation. The work is profusely and admirably illustrated and well maintains the high repute which the first edition acquired.

6.—*Chemistry of Cattle Feeding and Dairying.* By J. ALAN MURRAY. London: Longmans, Green & Co. 6s.

A careful study of this book has impressed us with its value both from a scientific and practical standpoint. The aim of the author was to develop and explain those fundamental principles which are the basis of all effective control in farming operations rather than to prescribe rules for particular cases. It is assumed "that the reader is familiar with the rudiments of inorganic and organic chemistry." Here is another illustration of the fact, which we have so often tried to impress upon readers of this journal, that without some knowledge of the elements of chemistry it is impossible to study with any hope of reward either the principles or practice of modern farming. The author, taking for granted that his readers possess this elementary knowledge, commences his work by describing in detail the nature and properties of those compounds which are characteristic of feeding stuffs. He next puts before his readers the various requirements of the animal for the purpose of nutrition. Food is utilised by an animal for several purposes. First, there are those which the author has treated under the head of "statics," *i.e.*, the study of the potential energy of any food by which it maintains the heat of the body or allows the animal to store up available energy. Next, what this food enables an animal to do is considered in a chapter headed "Dynamics," in which the effect of food in enabling the animal to perform work, in other words to "overcome resistance," is fully explained. The key note to this chapter is the idea that; given an animal with sufficient food to maintain itself in a state of rest, the amount of additional food should be proportional to the work done. A third call upon the food, limited, of course, to females, is the production of milk. "It is clear at the outset that the cow cannot produce milk out of nothing," says the author, in the opening of an interesting chapter on milk production, in which he subsequently points out that "it is extremely difficult to ascertain exactly what is the effect of any food upon the yield and composition of milk, because so many disturbing factors tend to obscure it." The last duty performed by food is to bring about an increase in weight. "Any increase in the live weight of an animal indicates an addition to the mass of its body, *i.e.*, of the quantity of matter in it, and the matter so added must be derived from the food and water consumed." But the object of the farmer is not merely to keep his cattle in good condition, or to make milk, or to fatten his stock; whichever of these he aims at doing must be done economically and profitably. It is, therefore, necessary to know how to value foods and how to combine rations, and in order to do this it is necessary to have an accurate knowledge of the various succulent, dry, and concentrated foods. All these subjects are carefully considered by the author, and the book concludes with some chapters on the composition of milk and of milk products.

Attention is drawn to the relation which exists between the gravity of milk and its composition, but one fact does not appear to be directly mentioned, although at the present day, when records are being kept of the milk yielded by cows, it is of considerable practical value. If the percentage of fat in milk is obtained by the Gerber tester and the Specific Gravity is taken carefully with a very accurate lactometer, the solids other than fat can be easily calculated. Thus, a milk having a gravity of 1·032 and containing 4 per cent. fat would contain 9 per cent. of other solids. Multiply the gravity by 1,000 and deduct 1,000. This would leave 32. Add the percentage of fat and divide by 4. The result gives the percentage of "solids other than fat." This simple method of calculation gives fairly accurate results and is of great value in cases where the expense of chemical analysis is out of the question.

We have only noticed one statement in the book which we consider misleading; it is that one ton of sugar beets is equal to from 2 to 2½ tons of swedes or mangolds for feeding purposes. This statement may be true of the beets and roots grown on the Continent. Now, however, that beets are being grown in England it might be considered true here, but it would not apply to the sugar beet roots grown in this country at present.

The work is one we can strongly recommend to all students of agriculture, and also to those practical men who have a slight knowledge of agricultural chemistry, and who are interested in the chemistry of cattle feeding or dairying.

7.—*The Agrarian Problem in the 16th Century.* By R. K. TAWNEY. London: Longmans, Green & Co. 9s.

This book will appeal to those who are interested in the history of our country or of Agriculture in particular. It is an attempt to trace one strand in the economic life of England from the close of the Middle Ages to the beginning of the Civil War. It is a study of the agrarian conditions of that period, whose transformation created so much distress and aroused such searching of heart among contemporaries. The following extracts from the introductory chapter give a fair idea of the ground covered by the author:—

> "Any one who turns over the Statutes and State Papers of the sixteenth century will be aware that statesmen were much exercised with an agrarian problem, which they thought to be comparatively new, and any one who follows the matter further will find the problem to have an importance at once economic, legal and political. The economist can watch the re-action of growing markets on the methods of subsistence farming, the development of competitive rents, the building up of the great estate, and the appearance, or at any rate the extension, of the tripartite division into landlord, capitalist farmer, and landless agricultural labourer, the peculiar feature of English rural society which has been given so much eulogy in the eighteenth century and so much criticism in our own. From a legal point of view the great feature of the period is the struggle between copyhold and leasehold, and the ground gained by the latter. Before the century begins, leases for years, though common enough on the demesne lands and on land taken from the waste, are the exception so far as concerns the land of the customary tenants. When the century closes, leasehold has won many obstinately resisted triumphs; much land that was formerly held by copy of court roll is held by lease; and copyhold tenure itself, through the weakening of manorial custom, has partially changed its character. The copy-holders, though still a very numerous and important class, are already one against which the course of events has visibly begun to turn, and economic rent, long intercepted and shared, through the fixity of customary tenure, between tenant and landlord under the more elastic adjustments of leasehold and competitive fines, begins to drain itself into the pockets of the latter. Politically, one can see different views of the basis of wealth in conflict, that which measures it by the number of tenants 'able to do service' contending with that which tests it by the maximum pecuniary returns to be got from an estate, and which treats the number of tenants as quite a subordinate consideration."
>
> "From a wider point of view the agrarian changes of the sixteenth century may be regarded as a long step in the commercialising of English life."
>
> "Who gained and who suffered by the enclosures, and to what extent? If the movement deserves to be called an agrarian revolution, it was certainly one which left a great

> many holders of small landed property intact, and perhaps even improved their position."
>
> "There is obscurity not only as to the details but as to the outlines of the movement. Different views have been expressed as to its origin, duration and points of maximum intensity."
>
> "Finally, one may ask, what was the effect of legislation against pasture-farming and evictions, and of the frequent administrative interference by which the governments of the sixteenth and seventeenth centuries tried to check them."
>
> "Such are some of the questions which are suggested by even a cursory survey of the agrarian problem."

The book is devoted to the consideration of these problems, and, though the author says "we cannot pretend to answer these questions: we leave them as riddles for the reader" yet he has gone far to enable each reader to form a fairly accurate judgment by the exhaustive treatment which each subject has received at his hands. He has sought far and wide for facts, figures, documentary evidence, and opinions which may throw a light upon his subject.

8.—*The Fertility of the Soil.* By E. J. RUSSELL. London: Cambridge University Press. 1s.

It is not often that one has the pleasure of reading a scientific book which attracts as much by its literary style as by the value of its contents. Dr. Russell has succeeded in combining these two qualities in this little book on a subject which might appear to interest only those who have to cultivate the soil for a living. As the author truly says:—

> "To those who have never thought about the matter the study of the soil may seem very trivial; it has neither the glory of the celestial nor the glamour of the unfamiliar; it is associated with such unintellectual and mundane concerns as food production, and has no place in our ordinary conception of a refined and liberal education.
>
> "But the soil has not always been looked upon as commonplace. In the mythology of Greece it held a very dignified position, the Goddess Gaea being the mother of mankind and the bounteous provider of food. Right through into much later times this idea of the kindly Mother Earth can be traced, and even to-day the reflective gardener takes more than a utilitarian interest in his soil. And the light of science more than justifies this interest, for it has shown that the soil is far more wonderful than any human mind had ever pictured it."

How wonderful the soil really is will become apparent to those who take the trouble to read this work. How the soil is first formed, what substances it contains, and upon which of these the plant is dependent for its sustenance are gradually unfolded to the reader.

But as we all know every soil is not a fertile soil, while some fertile soils are capable of growing larger crops than others. This leads to the question:—Upon what conditions does this fertility depend? The author says "six requirements are necessary for the plant: water, air, temperature, food, root room, and absence of harmful factors," and he then proceeds to discuss these. But in modern days man is not content with the natural fertility of the soil and seeks to raise it by artificial means. Having shown how this has gradually been brought about, the author says:—

> "Thus the land which we cultivate to-day is far removed from virgin land; it has been cleared, enclosed, levelled, often embanked, drained, chalked and marled by successive generations of cultivators. No small part of the difficulty of dealing with economic land problems arises from the great amount of capital that has been expended in the past in effecting the necessary improvements. In many cases the rent now received for agricultural land affords no adequate return for the outlay incurred even during the past sixty years. On the other hand, it is arguable that improvements in land are a condition of national existence, and therefore lie outside the scope of investments made for profit. We cannot now go into a discussion of these social and economic problems. The important conclusion is that our land owes much of its fertility to the labours of those who have gone before us. The improvements they effected are not wholly permanent, but have to be maintained and renewed by each generation; any neglect of this duty may result in marked deterioration of the land and may necessitate considerable expenditure of time and money to bring back the fertility to the level at which it had formerly stood."

The "chequered career of the clay soils" of this country and the improvement which has been made in sandy soils, or, as the author somewhat quaintly puts it, "the rise of the sands," show how the cultivators of the soil have endeavoured to make the most of the land, and are still keen on further improvements, for it is not only in England but in many other countries that the problem of improving the natural fertility of the soil has attracted attention, and will, as population increases, ever tend to become of more importance. A few words at the end of the book regarding the reclamation of moor land deserve at the present time special consideration.

In concluding this short notice of a very admirable book, we will quote three passages from the last chapter which show that practical questions arising out of his subject have not been overlooked by the author.

> "The problem of making a soil fertile consists in finding out first what conditions the plant requires for its proper development, and then altering the soil as far as possible to make it meet these requirements."
>
> "Our problem is to alter the soil: in the first instance it is necessary to ascertain what the actual soil conditions are, and then to find which constitutes the limiting factor and to change that one. Probably another will now be found to set the limit: this must in turn be changed and so on until the limit is set by the incapacity of the plant to make further growth, and not by any soil factor."
>
> "In applying these general principles to any particular case a considerable amount of balancing of probabilities is necessary. Means taken to alter the physical conditions of the soil may re-act on the micro-organisms, the chemical composition, etc., and *vice versa.* Above all, as the soil is cultivated for profit, economic considerations come in at every turn. Thus fertility problems are usually more complex than they appear at first sight."

9.—*Agricultural Arithmetic.* By J. C. NEWSHAM and T. V. PHILPOTT. London: Crosby, Lockwood & Son. 3s. 6d.

The title of this book explains its object which is to teach arithmetic in Rural Schools in such a way that it may be practically applied by the lad who takes up an agricultural pursuit in after years. The book deals with agricultural problems which have been met with in the conduct of a farm school during the last 15 years. Mr. D. T. Cowan, the director of Education for Hampshire, in a short preface says, "A book like the present is greatly needed wherever Rural Education is involved."

The work starts with the simple rules of arithmetic, and then passes on to the study of decimals, which, at the present day are even more important to farmers than to most people. A chapter on the use of units, proportion, and percentages, with numerous agricultural illustrations, appears to us one of the most useful in the book. But when we consider that surveying, soils, drainage, manures and feeding stuffs, the crops and live stock of the farm, labour, and machinery all need and receive attention, we cannot help feeling that the important place which arithmetic takes in the everyday life of the farm is seldom realised. Hence the great necessity for an accurate and thorough grounding in this subject to the lad who subsequently wishes to take an intelligent interest in his work. The book does more than teach agricultural arithmetic ; it is crowded with statistics relating to farming which many a practical farmer would find a difficulty in obtaining elsewhere. Those who have long left school might also find the study of the book interesting, while its possession would be of considerable advantage for the sake of the statistical information it contains.

AGRICULTURAL CHEMISTRY.

10.—*Chemistry for Students of Agriculture, etc.* By DODGSON AND MURRAY. London : Longmans, Green and Co. 3s. 6d.

11.—*A Manual of Agricultural Chemistry.* By HERBERT INGLE. London : Scott, Greenwood & Son.

In spite of the increasing number of books which are written upon Agricultural Chemistry or Chemistry in relation to Agriculture, there appears to have been a marked falling off in the interest that the subject attracts. It is difficult to explain why this is so. Probably there are many causes at work. It is not merely among students that the subject fails to attract the attention it deserves, but also among those actually engaged in farming. Even the value of analytical chemistry, as applied to the soils, manures, and feeding stuffs employed by the farmer, is being lost sight of, for in no other way could one account for the fact that from the members of this Society, which number over 1,000, the Consulting Chemist received last year only three samples for analysis (see p. 149). We venture to think that this state of affairs is very largely due to the method of teaching Agricultural Chemistry now in vogue, and to the nature of the books published on the subject. The two works, whose titles are given above, admirably illustrate this point, and are typical of what we consider the chief faults in the present day teaching of Agricultural Chemistry.

The first of the two volumes which have given rise to these thoughts enables one to form some idea of the training in Chemistry now being given in our Agricultural Colleges to students of

Agriculture. No fault can be found with this book or the training it implies, provided there is sufficient time for a student to pay so much attention to the one subject of chemistry pure and simple; as a text book of Chemistry, "to give the student such assistance as can be obtained from books" it is good. But it would be of little use except to a student at a college, or to one capable of obtaining advice and assistance in his studies. It would, for example, be of no value to a young farmer who not having had the advantages of a study of chemistry during his training, sought, later on, to obtain by reading some idea of chemistry in its application to Agriculture.

The second book shows what in our opinion is another fault of present day teaching. After describing the soil, the Author adds a chapter on the analysis and composition of soils, much of which is only suitable for the student of analytical chemistry or for a text book of agricultural analysis. The same may be said of some portion of the chapters on the analysis of manures, and that on the analysis of milk and milk products. It is not merely with the literature of agricultural chemistry that we find fault. The instruction given in our agricultural colleges causes time to be wasted in the laboratory by students attempting to make analyses which they never will require to make subsequently. Thus the great mistake is made of giving them a training only suitable for the very few who may desire to become agricultural analysts. Instead of being taught to understand and value the results of analyses made by qualified analysts, they really waste their time, fail to develop those faculties of observation and deduction which laboratory work is so valuable in stimulating, and altogether lose a true estimate of the relation of analytical Chemistry to Agriculture. Meantime Agricultural Chemistry as a distinct subject is neglected. The author himself may not be to blame; he probably merely satisfies the demand of the schools, for his book, of which this is the third edition, has attained considerable popularity. But how many farmers would read it, much less understand it. It requires for its study a long training in general chemistry such as few, if any, agriculturists possess, and without such a training much of the book would be unintelligible. To those who, by having passed through a course of chemistry such as is covered by the first of the two books now under notice, understand chemical terms and chemical formulæ, we can recommend Mr. Ingle's book as probably the most complete work on modern Agricultural Chemistry which exists in the English language. But it is very evident that between the present day student of Agricultural Chemistry and the present day practical farmer there is a great gulf fixed, and modern literature on Agricultural Chemistry is written in such a manner as to be almost unintelligible to the latter. Less scholastic and more practical works are greatly needed.

AGRICULTURAL BACTERIOLOGY.

12.—*Bacteria as Friends and Foes of the Dairy Farmer.* By WILFRID SADLER. London: Methuen & Co., Ltd. 1s. 6d.

13.—*Laboratory Methods in Agricultural Bacteriology.* By F. LOHNIS. London: C. Griffin & Co. 4s. 6d.

In the present day we cannot ignore the important part which bacteria play in bringing about some of the changes upon which the success of Agriculture depends. Already those who have to deal with milk and its products are well aware that bacteria are either their best friends or their worst foes. It is therefore essential that everyone connected with the milk industry should have as much knowledge of bacteria as they can possibly acquire. The first of these books gives that information with a freedom from technical terms and in as popular a style as could be desired. Its very moderate price ought to ensure for it a large sale among milk producers, butter-makers, and cheese makers, for they would obtain most interesting and valuable information from its study.

The second book is intended for students and workers at bacteriology. It is the most useful work for the student of bacteriology which we have seen and should be on the table of every worker in Agricultural Bacteriology to guide him in his operations. It will enable him to study by the most approved and up-to-date methods the bacteria to be found in air, water, feeding stuffs, manures, soils and dairy products, and is remarkable for the clearness and conciseness of the instructions given.

RURAL TEXT BOOKS.

There is no lack of Agricultural Literature in the United States, for the enormous number of students who are now attending, or have in the past attended, agricultural schools and colleges necessarily need to be kept in touch with the modern developments of agricultural practice or the discoveries of science which are being made at the numerous Experiment Stations. A fair proportion of this literature is published in America by the Macmillan Co., of

New York, whose British representatives are Messrs. Macmillan and Co., London. They have forwarded to us a number of these publications, and we shall briefly draw attention to those which we consider may with advantage be studied by agricultural students and farmers in this country. Those which appear to be more especially intended for students are termed text books, and we select the following for notice :—

14.—*Farm Management.* By G. F. WARREN. London : Macmillan and Co. 7s. 6d.

The author defines his subject as " the science of the organisation and management of a farm enterprise for the purpose of securing the greatest continuous profit." We think that most practical farmers will agree with the following brief but very apt description of the qualities which farm management requires :—

> " Successful farming requires good judgment in choosing a farm and in deciding on a type of farming. It demands clear business organisation and management, for the efficient use of capital, labour, horses, and machinery. It requires good judgment in buying and selling."
>
> " The success of the individual farmer is as much dependent on the application of business principles as it is on crop yields and production of animals."

After such statements we might have assumed that an attempt to write a work upon farm management which should be generally applicable would be impossible. How Dr. Warren has proceeded may best be explained in his own words.

> " The best way to find out what methods of farm organisation and management are most successful is to study the methods now used and the profits secured on large numbers of farms, and determine how the more successful ones differ from the less successful, and find to which of the differences the success is due. After such principles are found, they need to be tested by use in re-organising farms.
>
> " The conclusions in this book are based on investigations of the kind given above, and on cost accounts, census data, travel and study in different parts of the United States and experience in farming."

The work is certainly one of exceptional interest, and gives rise to many thoughts. Often we find the author giving a reason for customs which although known to exist have probably not previously been explained. Thus, in his second chapter, he enters into the question of what factors have brought about different types of farming, and one is surprised to find how numerous are the considerations which have gradually influenced in the past, and will probably continue to influence in the future, the type of farming practised in various parts of a country. Thus he points out how land values effect the type of farming so that there is a constant change taking place as the value of land increases. Another factor affecting the type of farming arises from the fact that the region which produces any special product attracts the corresponding buyers. He gives the following illustration :—

> " The writer has seen apples sell in an apple section for $3 per barrel when equally good apples in another county could not be sold for more than $2. The buyers do not care to go to a region where only a little of the product is to be secured. They are also afraid of the product from such a region, because, while a single farmer may have a good product, the average of the region is poor. The same fact tends to lower the price if the apples are shipped to a city. If they come from a region that is noted for its product the price is almost certain to be better than for the same quality from a less known section. It is also difficult to take advantage of car-load rates. All the facilities for shipment are better provided if there is a community business."

Intensive and extensive farming are next considered, then some live stock problems, and subsequently that very important subject, " the size of farms." Having discussed this problem fully, the author draws certain conclusions, one of which has at the present day a special interest for and deserves careful consideration by those who are looking to small holdings as a panacea for all the ills of agriculture.

His final conclusion is as follows :—

> " Whatever the type of farming, the farm should be large enough to allow for the use of the well-established labour-saving practices, and large enough to provide a variety of products that make a full year's work."

Capital, the laying out of a farm, and " accounts " are successively and very fully discussed, and the book concludes with a description of some successful farms. As to what constitutes the successful farm, the author says :—

> " No farm can be called successful that does not maintain its productivity, pay all farm expenses, interest on the capital,

> pay for work done by members of the family, and, in addition, leave the operator good pay for his year's work ; that is, a good labour income."

For a young man who is considering where to take a farm, and what to do with the farm when obtained, this book would prove of exceptional value. To those already farming, it would probably give many suggestions which they might utilise to make their farm still more profitable.

15.—*Animal Husbandry for Schools.* By M. W. HARPER. London : Macmillan & Co. 6s.

The Professor of Animal Husbandry in the New York State College of Agriculture designed this book to introduce students to the study of his subject while they were still in the schools or in colleges. The author seems fully to recognise the difficulty of the task he has set himself, and that " in all courses of study involving the consideration of material objects, the pupil should study not only about the thing, but should study the object itself."

The subject of Animal Husbandry is peculiarly difficult to teach, and the author says there is an utter lack of agreement among teachers as to which is the best method of presenting the subject. The course adopted in this book is to treat each variety of animal thoroughly before passing on to the next. Take for example, cattle. The subject is divided into breeds of cattle, judging cattle, feeding, care and management. Under these four headings, and sometimes others, Horses, Cattle, including dairy cattle, Sheep, Swine, and Poultry are considered in detail. There is a very valuable appendix, which runs to no less than fifty pages, entitled Laboratory Exercises, containing an immense amount of useful practical work suitable for the student to carry out. This appendix includes such subjects as the making of a ration, rough analysis of milk, splicing a rope, etc. There is also a very valuable table, taken from Professor Henry's book on " Foods and Feeding," which extends to many pages and shows both the digestible nutrients and the fertilising constituents in the chief feeding stuffs. At the end of each chapter, there are a number of questions on the subject treated which will be found useful for self examination or for the use of the teacher. The work is very well and fully illustrated. It is a novel idea to prepare a book on Animal Husbandry for schools, and we were inclined to think it an impossible task, but we must admit that the author has written a book which will go a long way towards making such instruction possible.

16.—*The Corn Crops.* By E. G. Montgomery. London: Macmillan and Co. 7s. 6d.

The title of this book may be misleading for the subjects dealt with are maize and sorghums as grown in the United States and Canada. In the United States the Indian corn or maize is used as food both for man and animals, but the sorghum products are employed mostly for the feeding of animals. However, here and there, in England the maize plant has of late been grown as a fodder crop, and to those who are interested in its growth this book cannot fail to be of value. The whole problem of its cultivation is, as the author points out, to secure " a perfect harmony between the plant and its environment." " The study of crop production involves the study of four general phases of the subject, as; (1) The plant, its structure, physiology and normal requirements. (2) A general survey of the region where it is proposed to cultivate the plant, to note how the natural conditions found correspond to the needs of the plant. (3) The adaptation of the plant on the one hand to natural conditions, and adaptation of soil on the other to the needs of the plant. Maximum production is obtained when perfect adaptation is secured. (4) Protection is necessary against other indigenous plants, fungus diseases, and insects." The author's treatment of his subject follows the above plan.

To us it may seem strange that a whole book can be devoted to a single crop like maize, for only about one fifth of the work is concerned with Sorghums. But the maize crop in America is of wide utility. About nine-tenths is utilised by live stock. The remainder is used in the arts, in manufacturing glucose, starch, cornmeal, breakfast foods, hominy, corn oil, and alcohol, etc. The husks are used in matting, the stalks and pith in packing, and the cobs in making tobacco pipes. -

The book is well and profusely illustrated, and is a good example of an exhaustive text book upon a single crop.

17.—*Manures and Fertilisers.* By H. J. Wheeler, Ph.D., D.Sc. London: Macmillan & Co. 7s.

The author of this volume was formerly Professor of Agricultural Chemistry and Director of the Agricultural Experiment Station of the Rhode Island State College, and is now agricultural chemical expert of the American Agricultural Chemical Company. Thus he possesses both an academic and business knowledge of his subject, and though we have read many books on manures by numerous authors we may confidently say that not one possessed the fullness of treatment which has been given to the subject by Dr. Wheeler. The author's object was "to provide in a measure for the needs of the graduate student in agriculture, also for the requirements of students in the agricultural colleges, teachers in agricultural schools, graduates of agricultural colleges and schools, agricultural institute lecturers, and the rapidly increasing number of intelligent men who are daily interesting themselves in the scientific phases of modern farming."

In considering the dung of domestic animals much attention is given to the bacteria and other organisms involved in its decomposition, for the reason that they greatly affect its value according to the varying conditions of moisture and æration under which it is kept.

From this chapter we may quote the following passages as fair illustrations of the author's treatment of his subject. How this loss of ammonia from dung exposed to the air is brought about is thus explained :—

> "One of the first changes taking place in stable manure is the breaking up of the urea into ammonium carbonate, and this finally into ammonia, carbon dioxide, and water."
>
> "It should be borne in mind that the change of urea into ammonia is the result of two stages of transformation, first to ammonium carbonate, and then to ammonia and carbon dioxide. If the re-action could be stopped at the end of the first stage by maintaining plenty of moisture and an excess of carbon dioxide, and if the exclusion of the air could also be accomplished, the second stage would not readily follow. Under the usual conditions, however, not only in urine itself, but also in the usual dung heap, the free movement of the air causes the removal of the excess of carbon dioxide, thus creating conditions favourable to the dissociation of a part of the ammonium carbonate. In addition to the direct volatilization of ammonia due to the previous loss of carbon dioxide, ammonia is also subject to direct oxidation into nitrogen gas and water. This change is readily effected by bacterial action, when the manure pile is open and loose so that the air gains free access. Even though the production of carbon dioxide takes place abundantly under such conditions it is naturally dissipated into the air, thus rendering little aid in preventing the dissociation of the ammonium carbonate and the consequent loss of ammonia."
>
> "Ammonification of solid manure and litter.—Under the

> conditions accompanying the usual normal fermentation of stable manure, the quantity of ammonia actually produced from the nitrogenous substances of the solid excrement and of the litter is very small. It has been shown repeatedly that a condition most favourable to the formation of ammonia from such substances is exclusion of air."

After describing the various nitrogenous organic manures in use. the author gives a short but interesting chapter upon the availability of the nitrogen in these substances. It is probably seldom realised how very great is the difference in the availability of these manures. Wagner and Dorsch, in some very carefully carried out experiments, found that while 100 per cent. of the nitrogen in nitrate of soda was available the amount available in dried blood was only 70 per cent., in bone meals, meat meals, and dried fish, 60 per cent., in stable manure 45 per cent., in wool waste 30 per cent., and in leather 20 per cent. But the subject is one which deserves far more attention than it has yet received, for many substances now used in large quantities by farmers do not yet appear to have been subjected to careful experiments in order to determine how far the nitrogen they contain is available to plants.

There is scarcely a substance which has been applied for manurial purposes which the author does not consider, and he even refers to the more recently employed catalytic fertilisers which are held to destroy soil amæbæ and ciliates, and hence to promote useful bacterial developments and the formation of ammonia. The work is not intended to give rule of thumb directions for the manuring of various crops but inculcates general principles to form a foundation for the study of the various relations of fertilisers and manures to soils and crops.

18.—*The Chemistry of Plant and Animal Life.* By H. SNYDER. London : Macmillan & Co. 6s. 6d.

This book is the outgrowth of instruction in chemistry given in the School of Agriculture of the University of Minnesota.

In his preface the Author says : " It has been the aim throughout to present the topics in such a way that they would be easily understood and to develop the reasoning powers of the student so that he would be able to make the best use of his chemistry in everyday life affairs." The student is wisely advised that it should be his aim to master the principles which form the basis of the subject so as to intelligently apply them to the solution of the new problems which continually present themselves. The work is essentially practical and attempts to teach chemistry to agricultural and other students in the only way in which chemistry can be taught, that is by "laboratory practice and collateral reading." It is, so far as the first part of the book is concerned, suitable for students who have not had any previous practical training in chemistry. This first part is a guide to the training in elementary chemistry necessary for agricultural students, and it is far more suitable as an introduction to agricultural chemistry than the majority of books we are acquainted with.

The only fault we have to find with it is one common to all books which come from America, especially treatises on chemistry, and that is the abominable spelling. We do not know how Americans pronounce oxide, but it is always written oxid. If they pronounce the i short then the spelling cannot be found much fault with. But in England the i is long, and following the general principle of the English language when a vowel preceding a consonant is long, another vowel must be placed after the consonant, in most cases the vowel being e. Upon what principle then the Americans drop the " e " after " oxid " and insert it in the word nitrites we fail to understand.

The second and larger portion of the book is devoted to the chemistry of plant and animal life. The various crops and the factors which influence their composition and feeding value are studied. Fermentation, and the chemistry of digestion and nutrition are then considered, and the book concludes with a careful enquiry into the rational feeding of animals and man. We think that, in a future edition, the term Agricultural Chemistry, which heads every other page, should be changed, for the book does not cover the chemistry of the soil; in fact, the word soil only appears once in the index. The most striking omission we have noticed is the absence of any adequate treatment of the manner in which the nitrogen of plants is obtained, or of the part nitrates play in the feeding of plants. Apart from these few faults, it is throughout a practical work, suitable for the agricultural student, and one which we can recommend, especially to those who have the opportunity of working in a laboratory.

Bath and West and Southern Counties Society.

TRURO MEETING, 1913.

JUDGES.

HORSES.

Shire. F. W. Griffin, Boro' Fen, Peterborough.

Hunters.—Hon. C. B. Portman, Goldicote, Stratford-on-Avon.

Hackneys.—A. Beldam, River View, Earith, St. Ives, Hunts.

Ponies.—The Rev. F. F. Dale, King's Hyde, The Mount, Lymington, Hants.

Harness.—A. Beldam, River View, Earith, St. Ives, Hunts.

Jumping.—I. de C. Treffry, Penarwyn, Par Station, Cornwall.

CATTLE.

Devon.—A. Trible, Halsdon, Holsworthy, North Devon.

South Devon.—J. Wood, Bourton, Totnes.

Shorthorn.—B. Read, Church Farm, Cam, Glos.

Hereford.—D. Edwards, Edgecombe, Swainshill, Hereford.

Sussex.—H. Rigden, Ashford, Kent.

Aberdeen-Angus.—J. Beddie, Banks, Strichen, N.B.

Jersey Bulls.—C. W. Journeaux, Devon Villa, St. Martin, Jersey.

Jersey Cows and Heifers.—J. H. Shore, Whatley, near Frome.

Guernsey.—G. T. Barham, Sudbury Park, Middlesex.

Kerry and Dexter.—F. N. Webb, Babraham, Cambridge.

Butter Tests.—A. F. Somerville, Dinder House, Wells, Somerset.

SHEEP.

Devon Longwoolled.—E. R. Berry Torr, Instow, R.S.O., N. Devon.

South Devon.—W. H. Pain, High House, Kingsbridge.

Kent or Romney Marsh.—F. A. Bensted, The Lawn, Sittingbourne, Kent.

Southdown.—W. S. MacWilliam, The Royal Farms, Windsor.

SHEEP—*continued.*

Hampshire Down.—J. Pain, Borough, Micheldever, Hampshire.

Oxford Down.—J. M. Eady, Lancefield, Thorpe Malsor, Kettering, Northants.

Dorset Down.—W. W. Lovelace, Piddlehinton, near Dorchester.

Dorset Horn.— C. B. Stiby, Gresford, Herringstone Road, Dorchester.

Exmoor Horn.—T. W. Smith, Ford, Eastdown, Barnstaple.

Dartmoor.- R. R. Dawe, Ford Farm, Sydenham Damerell, near Tavistock.

PIGS.

Berkshire. —W. A. Barnes, Haslucks Green Farm, Shirley, Birmingham.

Large Black.—H. E. Bastard, Tinten Manor, St. Tudy, Cornwall.

Large and Middle White and Tamworth.—S. Heaton, Worsley, Manchester.

Any Breed.- J. M. Harris, Chilvester Lodge, Calne, Wilts.

POULTRY.

G. Doble, Bridgwater: and W. H. Silvester, The Hawthorns, Hillsborough Park, Sheffield.

PRODUCE.

Cider.- J. H. Hill, Newtake, Staverton, Totnes, Devon.

Cheese. - E. Hill, Evercreech, S.O., Somerset.

Cream Cheese, Butter and Cream. D. T. Neagle, London, Gloucester and North Hants Dairy Co., Clifton, Bristol.

COMPETITIONS.

Butter-Making.—B. Read, Church Farm, Cam., Dursley, Glos.: and H. Baillis Tucker, Bath and Somerset Dairy Co., Ltd., Bath.

Milking.—S. Hoddinott, Worminster, Shepton Mallet.

Shoeing.— W. A. Welch, M.R.C.V.S., Bath.

FORESTRY.

G. Marshall, Estate Office, Godalming.

PRIZE AWARDS, 1913.

*** An animal designated in this list as the "reserve number" is entitled, *conditionally*, to succeed to any prize that may become vacant in its class by reason of the animal placed above it by the Judges failing afterwards to qualify.

† Animals, where not otherwise stated, may be considered to have been bred by the Exhibitor.

ABBREVIATIONS EXPLAINED :—S., sire ; d., dam ; s. d., sire of dam ; y., year ; m., month ; w., week ; d., day ; R., Reserve ; V.H.C., Very Highly Commended ; H.C., Highly Commended ; C., Commended.

HORSES.

SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book.)

CLASS 1.—*Shire Stallion, foaled before* 1911. [11 entries.]

I. (**£15**) and Special "B" (**£5**)—B. W. PEARCE, Tremenbeere Farm, Ludgvan, Cornwall, bay, **Mawgan Frants Crock** (30686), foaled 1910, bred by H. Boaden, Mawgan, Helston, Cornwall ; s Buscot Viking (24110), d Princess Bertha (46023), s d Royal William 2nd (12207).

II. (**£10.**)—LORD POLTIMORE, Poltimore Park, Exeter, bay, **Stanton House King** (28811), foaled 1909, bred by T. Lowe, Stanton House, Burton-on-Trent ; s Tatton Dray King (23777), d Stanton House Lassie (61937, Vol. xxxi.), s d Buscot Harold (16576).

III. (**£3.**)—C. LAITY, JUN., Rosehill, Camborne, Cornwall, bay, white near hind foot, **North Crawley Pilot** (29687), foaled 1907, bred by A. Lambert, Hurst Farm, North Crawley, Newport, Pagnell ; s Wilden Pilot (21030), d Bonny (66072), s d Warrior Chief (17692).

R.—S. SEMMENS, Trevarthian Farm, Marazion, brown, **Kestle Combination** (27463), foaled 1906, bred by R. Rundle, St. Columb Minor ; s Blaze of Worsley 2nd (21155), d Kestle Violet (42368), s d What I Wanted (15425).

H.C.—J. T. BICKELL, Hexworthy Stud Farm, Launceston, brown, **Youngsbury Ragged Boy** (28954, Vol. xxxii.), foaled 1908, bred by W. Needham, Muckton, Louth, Lincs. ; s Ragged Boy 2nd (22700), d Muckton Bute (51798, Vol. xxviii.), s d Keddington Prince Albert (21563). —G. BLIGHT, Tregonning Breage, Helston, Cornwall, dark bay, **Sandow 4th** (23671), foaled 1904, bred by D. Webster, Norcross, Carleton, Poulton-le-Fylde ; s Lockinge Manners (16780), d Norcross Lassie (33276), s d Crofton Matchless (15567).

CLASS 2.—*Shire Stallion, foaled in* 1911. [8 entries.]

I. (£15.)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, black, **Primley Draughtsman** (30801); s Tatton Dray King (23777), d Quality (46043), s d Dunsmore Jameson (17972).

II. (£10.)—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, bay, **Eaton Senator** (30417); s Redlynch Senator (24557), d Eaton Convent (50950), s d Phenomenon 3rd (18272).

III. (£3.)—LORD POLTIMORE, Poltimore Park, Exeter, brown, **Dewstow Wonder** (30365), bred by H. Oakley, Dewstow, Newport, Mon.; s Dewstow Chancellor (22288), d Dunsmore Quicksilver (53733 Vol. xxix., xxxi.), s d Dunsmore Jameson (17972).

R.—S. SEMMENS, Trevarthian Farm, Marazion, bay, **Nantwick Gay Manners** (30734), bred by S. Newport, Smeaton Hall, Wrenbury, Nantwich; s Lockinge Manners (16780), d Nantwich Smiler (67978), s d Markeaton Royal Harold (15225).

CLASS 3.—*Shire Colt, foaled in* 1912. [7 entries.]

I. (£15.)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, bay **Primley Errick** (Vol. xxxv.); s King Cole 7th (26351), d Rickford Lady (58140), s d Dodford Spark (23245).

II. (£10.)—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, bay, **Bracknell Forest King** (Vol. xxxv.), bred by R. Crowe, Zealots Hill, Bracknell, Berks; s King of Tandridge (24351), d Alexandra of Tandridge (46852), s d Victor of Waresley (19212).

III. (£3.)—F. J. OLVER, Bocadden, Lanreath, Cornwall, bay, **Bocadden Admiral**; s Saxon Admiral, d Bocadden Flower (53135), s d Insurgent.

R.—H. BOADEN, Skyburriowe, Mawgan, brown, **Aynho Friar King**, bred by A. P. Maclaren, Banbury; s Friar's Master (27348), d Buscot Regina (56415), s d Buscot Harold (16576).

C.—W. H. A. TUCKER, Trezare, Fowey, Cornwall, bay, **Trezare King**; s Savernake Albert (28746), d Westnorth Buttercup (52594), s d Norman Vulcan (19901).

SPECIAL PRIZE "B."

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

Best Exhibit in Class 1, 2 *or* 3, *the property of a resident in Cornwall.*

CLASS 4.—*Shire Mare in-Foal or with Foal at foot.* [3 entries.]

I. (£15) and Special "A"—W. AND H. WHITLEY, Primley Farm, Paignton, brown, **Norbury Juno** (51857), foaled 1905, bred by L. Salomons, Norbury Park, Dorking; s Hendre Champion (18079), d Childwick Youno (35375), s d Childwick Majestic (17254); with foal by Tatton Dray King (23777).

II. (£10) and Special "C" (**£6.**)—H. BOADEN, Skyburriowe, Mawgan, chestnut, **Leek Golden Drop** (45519), foaled 1903, bred by J. Brooks, Lady Green, Leek; s Rokeby Friar (14827), d Fancy (14722), by Paxton (4664).

SPECIAL PRIZE "C."

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

Best exhibit in Class 4, the property of a resident in Cornwall.

CLASS 5.—*Shire Filly or Gelding, foaled in* 1912. [4 entries.]

I. (£10.)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, bay mare, **Primley Empress,** bred by H. L. Choak, St. Clements, near Truro; s Primley Ambition (28678), d Worthyvale Jewel (49953), s d Parkside Pilot (20794).

II. (£5.)—LORD POLTIMORE, Poltimore Park, Exeter, brown filly, **Poltimore Sorais** (Vol. xxxv.), bred by Mrs. Sauber, Preston Hall, Aylesford, Kent; s Shamrock of Tandridge (25620), d Pailton Sorias (45919, Vols. xxvi., xxviii., xxxiv.), s d Lockinge Forest King (18867).

III. (Bronze Medal).—B. PEARCE, SEN., Tremenbeere Farm, Ludgvan, Cornwall, bay mare, **Princess May,** bred by H. Boaden, Mawgan, Helston, Cornwall; s Sterling Jameson (23728), d Princess Bertha (46023), s d Royal William 2nd (12207).

CLASS 6.—*Shire Filly or Gelding, foaled in* 1911. [3 entries.]

I. (£10)—LORD POLTIMORE, Poltimore Park, Exeter, bay filly, **Tandridge Choice** (72671), bred by M. Michaelis, Tandridge Court, Oxted; s Shamrock of Tandridge (25620), d Pailton Sorias (45919, Vols. xxvi., xxviii., xxxiv.), s d Lockinge Forest King (18867).

II. (£5.)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, brown mare, **Primley Duchess** (72017); s Tatton Dray King (23777), d Dunsmore Picturesque (50934), s d Dunsmore Jameson (17972).

III. (Bronze Medal) and **R.** for Special "D."—O. EDDY, Treloweth, St. Erth, bay gelding, **Captain,** bred by G. Blight, Tregonning, Breage; d Darling.

CLASS 7.—*Shire Filly or Gelding, foaled in* 1910. [2 entries.]

I. (£10) and **R.** for Special "A."—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, brown mare, **Primley Carnation** (68228), bred by A. Denniff, Dore, Sheffield; s Tatton Dray King (23777), d Tatton Nell Gwynne (43534), s d Markeaton Royal Harold (15225).

II. (Silver Medal) and Special "D." **(£5.)**—A. J. J. NICHOLLS, Trewollock, St. Columb Minor, bay filly, **Railton Day Dream** (68374), bred by R. Rundle, Kestle, St. Columb Minor, Cornwall; s Blaze of Worsley 2nd (21155), d Kestle Violet (42368), s d What I Wanted (15425).

SPECIAL PRIZE "A."

GIVEN BY THE SHIRE HORSE SOCIETY.

A Gold Medal, or the sum of £10, *for Best Mare or Filly in the Shire Horse Classes, under Condition* 48, *and to the Breeder of the winner under the Conditions stated, a prize of* £5.

SPECIAL PRIZE "D."

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

Best Exhibit in Class 6 *or* 7, *the property of a resident in Cornwall.*

ANY AGRICULTURAL BREED.

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

CLASS 8.—*Mare or Gelding, foaled in* 1908 *or* 1909, *the property of a resident in Cornwall.* [1 entry.]

I. (**£5.**)—W. LITTLETON, Treffry, Bodmin, bay, **Bishopthorpe Fashion** (Vol. xxxiv.), foaled 1909, bred by W. Lofthouse, Bishopthorpe, York; s Dewstow Conqueror (20427), d Bishopthorpe Brisk (34847), s d Warwick 5th (17064); with foal by Treffry Kingmaker.

HUNTERS.

CLASS 9.—*Hunter Mare, in-Foal, or with Foal at foot.* [5 entries.]

I. (**£15**) and Specials "E" and "G" (**£10.**)—J. J. E. FARQUHARSON, Sutton Bingham, Yeovil, Somerset, chestnut, **Alice R** (4498, Vol. vi.), foaled 1900, bred by Mrs. Roch, Plas-y-Bridell, Kilgernan, R.S.O., Pembrokeshire; s Glory Smitten, d Presto, s d Scherzo; with foal by Alone Sir.

II. (**£10**), Special "J" (**£6**), and **R.** for Special "G."—O. EDDY, Treloweth, St. Erth, bay, **Kitty,** foaled 1900: with foal by Ejacker.

III. (**Bronze Medal**) and **R.** for Special "E."—E. W. ROBINSON, Liscombe, Leighton Buzzard, chestnut, **Partridge 2nd,** aged, bred by E. Dempsey, Ballystarney, Mullinavat; s Young Marden, d Poll; with foal by Red Sahib.

R. and **R.** for Special "J."—J. WILLIAMS, Scorrier, bay, **Eyeglass,** foaled 1903, bred by — Teague, Tywarnhale, Scorrier; s Trayles; with foal by Golden Grebe.

H.C.—J. PENNA & SONS, Trelowarren, Mawgan, Helston, chestnut, **Rosette,** foaled May 11, 1898; s Uncle Sam, d Jessy; with foal by Kel d'or.

SPECIAL PRIZE "E."

GIVEN BY THE HUNTERS' IMPROVEMENT AND NATIONAL LIGHT HORSE BREEDING SOCIETY, UNDER CONDITIONS 49 AND 50.

A Gold Medal, or £5 and a Bronze Medal for the best Hunter Brood Mare in Class 9, *registered with a number in the Hunter Stud Book at the time of entry or within a month of the award, not having previously won the above-named Society's Gold Medal as a Brood Mare in* 1913, *and which must have her foal at foot, or produce a living foal in* 1913 *to a thoroughbred horse or Registered Hunter sire. In the first instance a certificate to that effect must be forwarded before the Medal is sent. Only prize winners in the class were eligible for the Medal.*

SPECIAL PRIZE "G."

GIVEN BY THE PRESIDENT (VISCOUNT FALMOUTH).

Best exhibit in Class 9, *the property of a tenant farmer.*

SPECIAL PRIZE "J."

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

Best Exhibit in Class 9, *the property of a resident in Cornwall.*

CLASS 10.—*Hunter Filly, Colt, or Gelding, foaled in* 1912. [9 entries.]

I. (**£10.**)—E. W. ROBINSON, Liscombe, Leighton Buzzard, brown colt, **Comissator**; s Common, d Vademecum, s d Hackler.

II. (**£5**) and Special "H" (**£5.**)—E. HOSKING, Great Rosevidney, Ludgvan, chestnut filly, **Pretty Polly**; s Irish Linen (4361), d Swaffham Rose (13132), s d Bonfire (2381).

III. (**£3.**)—W. G. BUSK, Wraxall Manor, Cattistock, chestnut colt, **Tenor**; s Chevéle d'or, d Treble, s d Woodranger.

R. and **R.** for Special "H."—J. J. E. FARQUHARSON, Sutton Bingham, Yeovil, Somerset, brown or dark bay colt, **Algiers**, bred by W. Corry, Over Compton, Sherborne, Dorset; s Ruadshyree, d Alice R (4498, Vol. vi.), s d Glory Smitten.

V.H.C.—S. ADAMS, Penpraze, Nancegallan, Helston, Cornwall, chestnut colt, **Rosebery**; s Rosebery Dispatch, d Rose.

H.C.—THE HON. V. AGAR ROBARTES, Lanhydrock, Bodmin, bay gelding, **Glenside**, bred by J. Liesbriel, Havott, Liskeard; s Glenrossal, d Molly, s d Flaxby.

SPECIAL PRIZE "H."

GIVEN BY THE PRESIDENT (VISCOUNT FALMOUTH).

Best Exhibit in Class 10, *the property of a tenant farmer.*

CLASS 11.—*Hunter Filly or Gelding, foaled in* 1911. [6 entries.]

I. (**£10**) and **R.** for Special "I."—J. J. E. FARQUHARSON, Sutton Bingham, Yeovil, Somerset, chestnut gelding, **Robin R.**, bred by W. Corry, Over Compton, Sherborne, Dorset; s Battlement, d Alice R. (4498, Vol. vi.), s d Glory Smitten.

II. (**£5.**)—S. J. COWLING & SON, Trewint, Blisland, bay gelding; s Ventriloquist, d Molly, s d King Ebor.

III. (**£3.**)—E. DAY, Treloskan, Cury Cross Lanes, chestnut filly, **Irish Girl**; s Irish Linen.

R.—J. SALMON, Trevemper, Newquay, chestnut gelding, **Flashlight**; s Irish Linen, d Gwennie, s d Seaport.

H.C.—A. J. SLADE, Budshead Barton, St. Budeaux, Devon, bay gelding, **Rosslyn**; s Glenrossal, d Camilla, s d Rockaway.

Class 12.—*Hunter Filly or Gelding, foaled in* 1910. [6 entries.]

I. (**£10**) and Special " I " (**£10.**)—N. J. Pearce, Retallack Farm, St. Hilary, Cornwall, bay gelding, **Retallack Wonder,** bred by J. Laity, Goldsithney; s Golden Petrol, d Douglas, s d Countess.

II. (**£5.**)—J. W. Langdon, "Treviskey," Veryan, Grampound Road, dark bay gelding, **Cigar,** bred by N. T. Martin, Trewince, Grampound Road; s Star of Yorkshire.

III. (**£3.**)—A. Chynoweth, Trenisson, Veryan, Grampound Road, chestnut gelding, **Sun Star,** bred by G. Andrews, St. Columb; s Golden Petrol, d Nora, s d Uncle Sam.

R.—J. C. Daubuz, Killiow, Truro, chestnut gelding, **Lemberg**; s Phœnix, d Darling, s d Uncle Sam.

V.H.C.—The Hon. T. C. Agar Robartes, M.P., Lanhydrock, Bodmin, black gelding, **Cash** (3857); s Battlement, d Goldfinder (3857, Vol. viii.), s d Oriflame.

Special Prize " I."
Given by the President (Viscount Falmouth).

Best Exhibit in Classes 11 *and* 12, *the property of a Tenant Farmer.*

Class 13.—*Novice Class. Hunter Mare or Gelding, foaled in* 1909. [6 entries.]

I. (**£10**) and Special " F."—J. E. Clegg, The Starkies, Bury, Lancashire, grey gelding, **Kilts,** bred by A. Cragg, Manor House, North Newbald, Brough, Yorkshire; s Scotch Sign, d Silver Tail, s d Knight Templar.

II. (**£5.**)—T. P. Lawry, Tregarre, Mawnan, Falmouth, bay gelding, **Viceroy**; s Salamander.

III. (**£3.**)—A. J. Jackman, Caprera Terrace, Plymouth, dark grey gelding, **Shamrock**; s Aenellin, s d Reliable.

Class 14.—*Hunter Mare or Gelding, foaled before* 1910, *to carry under* 14 *stone.* [9 entries.]

I. (**£20**) and **R.** for Special " L."—W. H. Yeo, Durnford Mews, Stonehouse, Devon, chestnut gelding, **Eaton Boy,** foaled 1908.

II. (**£10.**)—R. W. Fox, Grimstone, Horrabridge, Devon, chestnut gelding, **Cardinal,** foaled 1908, bred by D. Dowse, Carmew, Co. Wicklow; s Red Prince 2nd, d by Great Britain.

III. (**£3.**)—A. J. Jackman, Caprera Terrace, Plymouth, chestnut gelding, **Gold Dust,** foaled 1908; s General Peace.

R. for Special "✓K."—T. Rundle, Colan Barton, bay gelding, **Chancellor,** foaled 1908; d Perfection, s d Larakin.

R.—J. E. Clegg, The Starkies, Bury, Lancashire, grey gelding, **Kilts,** bred by A. Cragg, Manor House, North Newbald, Brough, Yorkshire; s Scotch Sign, d Silver Tail, s d Knight Templar.

V.H.C.—T. P. Lawry, Tregarre, Mawnan, Falmouth, bay gelding, **Viceroy**; s Salamander.

Class 15.—*Hunter Mare or Gelding, foaled before* 1910, *to carry* 14 *stone or over.* [8 entries.]

I. (£20) and Special "L."—A. J. Jackman, Caprera Terrace, Plymouth, brown gelding, foaled 1908; s Tramoor, s d Tacitus.

II. (£10) and Special "K" **(£5.)**—J. Williams, Scorrier, bay gelding, foaled 1908; s Golden Petrol.

III. (£3.)—E. Day, Trelosken, Cury Cross Lanes, brown mare, **Daisy Belle,** foaled 1907; s Golden Petrol.

R.—J. Williams, Scorrier, black gelding, **Jack Johnson,** foaled 1908; s Palaverer, d Salt Fish, s d Norfolk.

Special Prize "K."
Given by the Royal Cornwall Agricultural Association.

Best Exhibit in Class 14 *or* 15, *bred by and the property of a resident in Cornwall, not exceeding* 6 *years old.*

Given by the Royal Cornwall Agricultural Association.

Class 16.—*Hunter Mare or Gelding, not exceeding* 6 *years old, bred by and the property of a Cornish Tenant Farmer.* [5 entries.]

I. (£5.)—N. J. Pearce, Retallack Farm, St. Hilary, Cornwall, bay gelding, **Retallack Wonder,** bred by J. Laity, Goldsithney; s Golden Petrol, d Douglas, s d Countess.

II. (£3.)—J. Salmon, Trevemper, Newquay, chestnut gelding, **Flashlight**; s Irish Linen, d Gwennie, s d Seaport.

III. (£2.)—T. Rundle, Colan Barton, bay gelding, **Chancellor,** foaled 1908; d Perfection, s d Larakin.

R.—E. Day, Trelosken, Cury Cross Lanes, brown mare, **Daisy Belle,** foaled 1907; s Golden Petrol.

Special Prize "F."
Given by the Hunters' Improvement and National Light Horse Breeding Society.

A Silver Medal or £1 *(at the option of the winner), for the Best Hunter Mare or Gelding of any age, exhibited by a member of the Hunters' Improvement and National Light Horse Breeding Society, whose subscription to that Society must be paid within a month of the award. Only Prize-winners in the classes were eligible for these medals.*

GIVEN BY THE ROYAL CORNWALL AGRICULTURAL ASSOCIATION.

CLASS 17.—*Thoroughbred Stallion, not having won a King's or Board Premium, the property of a resident in Cornwall.* [1 entry.]

I. (**£5.**)—C. LAITY, JUN., Rosehill, Camborne, Cornwall, chestnut, **Irish Linen,** foaled 1897, bred by H. M. Foster ; s Gervas, d Cambric, s d Camballo.

SPECIAL PRIZE "L."
GIVEN BY THE PROPRIETORS OF THE "WEST BRITON AND CORNWALL ADVERTISER."

Best Hunter in Classes 9 *to* 17, *Plate value* £10.

HACKNEYS.

(Registered or eligible for registration in the Hackney Horse Society's Stud Book.)

CLASS 18.—*Hackney Mare, in-Foal, or with Foal at foot.* [3 entries.]

I. (**£10**) and **R.** for Special "M."—H. MORKAM, "Sworne," St. Martin, Cornwall, liver chestnut, **Rhodesia** (11430), foaled 1896 ; s Danegelt (174), d Sunshine (7477) ; with foal by Chevin Royalist (10982).

II. (**£5.**)—W. E. HAWKEY, Nansough, Grampound Road, Cornwall, black, **Queenie,** foaled 1900, bred by — Richards, Stythians, Cornwall ; s Doncaster Reality ; with foal by Amusement.

CLASS 19.—*Hackney Filly, Colt, or Gelding, foaled in* 1912. [1 entry.]

I. (**£10.**)—E. HOSKING, Great Rosevidney, Ludgvan, chestnut filly, **Pretty Polly** ; s Irish Linen (4361), d Swaffham Rose (13132), s d Bonfire (2381).

CLASS 20.—*Hackney Filly or Gelding, foaled in* 1911. *First prize,* £10 —*second,* £5—*third,* £3.

[NO ENTRY.]

CLASS 21.—*Hackney Mare or Gelding, foaled in* 1909 *or* 1910. [1 entry.]

I. (**£10**) and Special "M."—R. H. SAMPSON, J.P., Bryngwili, Pontardulais, South Wales, chestnut filly, **Bryngwili Flashlight** (H.S.B. 21900), foaled 1910 ; s Flash Cadet (10203), d Princess Pauline (18511), s d Polonius (4931).

SPECIAL PRIZE "M."
GIVEN BY THE HACKNEY HORSE SOCIETY.

Silver Medal for the best Mare or Filly exhibited in Classes 18 *to* 21, *under Condition* 51.

PONIES.

(Of the Prizes offered in Classes 22 to 25, £12 was contributed by the late Viscount Tredegar.)

Class 22.—*Pony Stallion, not exceeding* 15 *hands, suitable to get Polo or Riding Ponies.* [2 entries.]

I. (£6) and Special "O."—The Keynsham Stud Co., Keynsham, near Bristol, dark chestnut, **White Wings,** foaled 1906, bred by the Radnorshire Polo and Riding Pony Co., Ltd., Bleddfa, Llangunllo, R.S.O., Radnorshire; s White Mask (190), First Flight (615), s d Balquihidar.

Class 23.—*Pony Mare, not exceeding* 14.2 *hands, suitable to breed Polo or Riding Ponies, in-foal, or with foal at foot.* [6 entries.]

I. (£6.)—Miss I. Collier, Foxhams, Horrabridge, bay mare, **Peach,** aged; with foal by Cruickshanks.

II. (£4) and Special "N."—S. G. Chellew, M.R.C.V.S., "Kirton," Redruth, chestnut, **Vixen 2nd,** foaled 1905, bred by W. Masters, Ford Farm, Lanhydroc; s Newmarket, d Freda, s d Galliard; with foal by Golden Grebe.

III. (£2.)—J. Williams, Scorrier, chestnut, **Kalmia,** foaled 1900; s Lancaster, d Lucy, s d Lifton; with foal by Verditer.

R. and Special "P."—H. Carne, Higher Town, near Truro, bay, **Sweetheart,** foaled 1905, bred by S. S. Symons, Exeter; with foal by Verditer.

Class 24.—*Pony Filly, Colt or Gelding, foaled in* 1911, *not exceeding* 14.1 *hands.* [3 entries.]

I. (£6.)—Miss Calmady-Hamlyn, Bidlake Vean, Bridestowe, brown gelding, **Rennet**; s Descender T.B., d Junket.

II. (£4.)—J. Rowe, Gunwalloe, Helston, light bay gelding, **Pat**; s Irish Linen, d Maggie.

III. (**Bronze Medal**).—J. Williams, Scorrier, chestnut gelding; s Squire Darling, d Kalmia, s d Lancaster.

Class 25.—*Pony Filly, Colt or Gelding, foaled in* 1910, *not exceeding* 14.1½ *hands.* [3 entries.]

I. (£6.)—Miss Calmady-Hamlyn, Bidlake Vean, Bridestowe, brown filly, **Othrabella,** bred by Sir J. Barker, Bishops Stortford; s Othrae (T.B.), d Black Bella (T.B.), s d Black Thorn (T.B.).

II. (£4.)—J. M. Roberts, Sparnock, Kea, Truro, Cornwall, brown filly, **Wilhelmina**; s Palaverar, d Marksman.

SPECIAL PRIZES.

Given by the Polo and Riding Pony Society.

Subject to Condition No. 53.

N.—A Silver Medal for the best Polo Pony Brood Mare in the Brood Mare Class, registered or eligible for registration in the Stud Book.

O.—A Silver Medal for the best Polo Pony Stallion, registered or eligible for registration in the Stud Book ; or best Polo Pony Entire Colt, one, two or three years old, entered or eligible for the Supplement, viz., by a Registered or Entered Sire or out of a Registered or Entered Dam.

P.—A Bronze Medal for the best Foal, entered or eligible for the Supplement, viz., by a Registered or Entered Sire, or out of a Registered or entered dam.

HARNESS AND JUMPING CLASSES.

HARNESS.

CLASS 26.—*Mare or Gelding, not over* 14.2 *hands, driven in harness on the first day of the Show.* [5 entries.]

I. (£10.)—C. RADCLIFFE, 19, Newport Road, Cardiff, **Peterston Pearl.**

II. (£5.)—C. RADCLIFFE, **Peterston Princess.**

III. (Bronze Medal) and **R.** for Special " Q "—W. J. C. JOHNS, West Trewergie Redruth, bay mare, **Dinarth Magnet,** bred by J. Jones & Son, Colwyn Bay; s Herod, d Tissington Safety Pin, s d Sir Horace.

R.—MRS. THOMAS GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Action Again.**

CLASS 27.—*Tandems (Mares or Geldings), driven in harness on the first day of the Show.* [2 entries.]

I. (£10.)—C. RADCLIFFE, 19, Newport Road, Cardiff, **Peterston Pearl**; and **Peterston Princess.**

II. (Silver Medal).—W. E. HAWKEY, Nansough, Ladock, bay mare, **Pearl**; black gelding, **Magpie.**

CLASS 28.—*Mare or Gelding,* 15 *hands or over, driven in harness on the second day of the Show.* [5 entries.]

I. (£10.)—MRS. T. GLENCROSS, The Loose Box, Weston-super-Mare, brown gelding, **Red Hill King.**

II. (£5) and Special " Q "—S. LANGMAID, 29, Martin Terrace, Morice Town, Devonport, chestnut gelding, **Perfection,** foaled 1907, bred by S. Durbin, Honiton, Devon ; s Danegelt, d Couvertrice, s d Agility.

III. (Bronze Medal).—MAJOR J. MEAD, Sunrise, Falmouth, chestnut mare, **Falmouth Gladys,** foaled 1908 ; s Duke of Cornwall (9642), d Penrose (7402), s d Evolution (2058).

R.—W. H. BURSTON, Fitzroy, Norton, Taunton, chestnut, **Young Squire.**

H.C.—F. J. NICHOLLS, Station Hill, St. Austell, brown gelding, **Glenavon Radiant,** foaled 1909, bred by Burdett Coutts, M.P., Brookfield Stud; s Matthias (6473), d Fiamma (16609), s d Lord Seamer (4383).

CLASS 29.—*Pair of Carriage Horses (Mares or Geldings), driven in double harness on the second day of the Show.* [2 entries.]

I. (£10.)—C. RADCLIFFE, 19, Newport Road, Cardiff, **Peterston Pearl**; and **Peterston Princess.**

II. (Silver Medal).—W. E. HAWKEY, Nansough, Ladock, black gelding, **Magpie**; and chestnut gelding, **Wigginton Monty.**

CLASS 30—*Mare or Gelding, over* 14.2 *and under* 15 *hands, driven in harness on the third day of the Show.* [3 entries.]

I. (£10.)—A. BUTCHER, George and Railway Hotel, Bristol, brown mare, **Lady Gordon.**

II. (£5.)—H. M. ROGERS, Nansloe, Helston, chestnut gelding, **The Romp**; s Prickwillow Connaught.

III. (Bronze Medal).—W. E. HAWKEY, Nansough, Ladock, chestnut gelding, **Wigginton Monty.**

CLASS 31.—*Trotting. Best Mare, Stallion or Gelding, under* 15 *hands, for speed and action, driven in harness on the third day of the Show.* [4 entries.]

I. (£10.)—W. WINANS, Pluckley, Kent, bay mare, **Topsy.**

II. (£5.)—W. J. C. JOHNS, West Trewergie, Redruth, bay mare, **Dinarth Magnet,** bred by J. Jones & Son, Colwyn Bay; s Herod, d Tissington Safety Pin, s d Sir Horace.

III. (Bronze Medal).—A. BUTCHER, George and Railway Hotel, Bristol, brown mare, **Lady Gordon.**

R.—MRS. T. GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Action Again.**

(The Prizes in Classes 32 and 33 were given by the Cornwall Local Committee.)

CLASS 32.—*Mare or Gelding, over* 14 *hands, the property of a resident in Cornwall, and that had been such for not less than three months prior to the date of the Show. Driven in harness on the fourth day of the Show.* [4 entries.]

I. (£5.)—MAJOR J. MEAD, Sunrise, Falmouth, chestnut mare, **Falmouth Gladys,** foaled 1908; s Duke of Cornwall (9642), d Penrose (7402), s d Evolution (2058).

II. (£2 10s.)—H. M. ROGERS, Nansloe, Helston, chestnut gelding, **The Romp**; s Prickwillow Connaught.

R.—W. E. HAWKEY, Nansough, Ladock, chestnut gelding, **Wigginton Monty.**

CLASS 33.—*Dray or Cart Mare or Gelding, suitable for and having been worked by a Cornwall Brewer, Builder, Timber Merchant, Railway Company, Haulier Tradesman or Corporation, for not less than three months immediately prior to the date of the Show. To be exhibited with gear on the foutrh day of the Show.—First prize,* £5 *—second,* £2 10*s.*

[NO ENTRY.]

(The Prize in Class 34 was given by the Royal Cornwall Agricultural Association.)

CLASS 34.—*Mare or Gelding, not exceeding six years old, the property of a Resident in Cornwall. Driven in harness on the fourth day of the Show.* [4 entries.]

I. (£5.)—W. J. C. JOHNS, West Trewergie, Redruth, bay mare, **Dinarth Magnet,** bred by J. Jones & Son, Colwyn Bay; s Herod, d Tissington Safety Pin, s d Sir Horace.

CLASS 35.—*Donkeys, driven in harness on the fourth day of the Show* [3 entries.]

I. (£3.)—F. HAMPTON, North Country, Redruth, light stallion, **Charley,** foaled 1899.

II. (£2.) - E. CHAZER, Sewage Farm, Redruth, dark brown, **Bert.**

III. (Bronze Medal).- F. HAMPTON, light mare, **Wild Girl,** foaled 1907.

CLASS 36.—*Mare or Gelding, not over* 13.2 *hands, driven in harness on the fifth day of the Show.* [4 entries.]

I. (£10.)—MRS. T. GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Mel Valley Spring Chicken.**

II. (£5.)—W. J. C. JOHNS, West Trewergie, Redruth, bay mare, **Dinarth Magnet,** bred by J. Jones & Son, Colwyn Bay: s Herod, d Tissington Safety Pin, s d Sir Horace.

III. (Bronze Medal).—F. J. NICHOLLS, Station Hill, St. Austell, bay mare, **Braishfield Spark** (Vol. xxx.), foaled 1908, bred by Mrs. M. King, Braishfield Manor, Romsey; s Champion Fireboy (7440), d Grovehill Midget (13530), s d Matchless of Langton (5722).

CLASS 37.—*Trotting. Best Mare, Stallion, or Gelding,* 15 *hands or over, for speed and action, driven in harness on the fifth day of the Show.* [5 entries.]

I. (£10.)—W. WINANS, Pluckley, Kent, bay mare, **Nancy Clancy.**

II. (£5.)—G. M. BERESFORD-WEBB, Norbright, South Godstone, Surrey, black stallion, **Magic Chimes,** foaled 1901, bred by Village Farm, E. Aurora, N.Y., U.S.A.; s Chimes, d Princess Ruth, s d Mambrino King.

III. (Bronze Medal).—S. LANGMAID, 29, Martin Terrace, Morice Town, Devonport, chestnut gelding, **Perfection,** foaled 1907, bred by S. Durbin, Honiton, Devon; s Danegelt, d Couvertrice, s d Agility.

SPECIAL PRIZE "Q."
GIVEN BY THE HACKNEY HORSE SOCIETY.

A Silver Medal for the best Mare or Gelding exhibited in Single Harness in Classes 26 *to* 37, *subject to Conditions* 52.

JUMPING.

CLASS 38.—*Mare or Gelding,* 15 *hands and over, jumping over the course in the best form on the first day of the Show.* [11 entries.]

I. (£10.)—T. GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Tradesman.**

II. (£5.)—E. F. DAMERELL, Colebrook Farm, Plympton, Devon, chestnut gelding, **Gay Boy.**

III. (£2.)—T. GLENCROSS, bay mare, **Blink Bonny.**

R.—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Progress**, foaled 1905, bred by J. Filkins, Pengelly, Grampound ; s Deemster.

CLASS 39.—*Mare or Gelding, under* 15 *hands, jumping over the course in the best form on the first day of the Show.* [8 entries.]

I. (£10.)—T. AND W. SINGER, High House, Corsley, Warminster, mare, **Another Delight.**

II. (£5.)—J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Kitty.**

III. (£2.)—F. W. ROUSE, Lanlivery, Lostwithiel, Cornwall, chestnut mare, **Pretty Polly,** foaled 1908 ; s Amusement.

R.—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Speculation,** foaled 1904, bred by the late Sir L. Molesworth, Trewarthinick, Grampound Road.

CLASS 40.—*Mare or Gelding,* 15.3 *hands and over, jumping over the course in the best form on the second day of the Show.* [6 entries.]

I. (£10.)—T. AND W. SINGER, High House, Corsley, Warminster, **Nomination.**

II. (£5.)—T. AND W. SINGER, **Tiny White.**

III. (£2.)—J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Fidget.**

CLASS 41.—*Mare or Gelding, under* 15.3 *hands jumping over the course in the best form on the second day of the Show.* [8 entries.]

I. (£10.)—J. GLENCROSS, Garth House, Weston-super-Mare, Somerset, chestnut mare, **Lady,** 8 years.

II. (£5.)—T. GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Tradesman.**

III. (£2.)—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Progress,** foaled 1905, bred by J. Filkins, Pengelly, Grampound ; s Deemster.

R.—E. F. DAMERELL, Colebrook Farm, Plympton, Devon, chestnut gelding, **Gay Boy.**

CLASS 42.—*Mare or Gelding*, 15 *hands and over, jumping over the course in the best form on the third day of the Show.* [11 entries.]

I. (Equal), £3 15s.)—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Progress**, foaled 1905, bred by J. Filkins, Pengelly, Grampound ; s Deemster.

I. (Equal) (£3 15s.)- J. GLENCROSS, Garth House, Weston-super-Mare, Somerset, chestnut mare, **Lady**, 8 years.

I. (Equal) (£3 15s.) J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Fidget.**

I. (Equal) (£3 15s.) T. AND W. SINGER, High House, Corsley, Warminster, **Tiny White.**

III. (£2.) -T. GLENCROSS, The Loose Box, Weston-super-Mare, bay gelding, **Tradesman.**

CLASS 43. *Mare or Gelding, under* 15 *hands, jumping over the course in the best form on the third day of the Show.* [8 entries.]

I. (£10.) -T. GLENCROSS, The Loose Box, Weston-super-Mare, bay mare, **Kitty.**

II. (£5.) J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Kitty.**

III. (£2.) F. W. ROUSE, Lanlivery, Lostwithiel, Cornwall, chestnut mare, **Pretty Polly**, foaled 1908 ; s Amusement.

R.—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Speculation,** foaled 1904, bred by the late Sir L. Molesworth, Trewarthinick, Grampound Road.

(The First Prize in Class 44 was given by G. H. Johnstone, Esq. and the Second Prize by E. Hain, Esq.)

CLASS 44.—*Mare or Gelding, entered and ridden by an Officer, Non-Commissioned Officer or Trooper of the Royal 1st Devon Yeomanry, in Uniform, that shall, if required by the Judges, jump over the course in the best form on the third day of the Show.* [2 entries.]

I. (£5.) J. P. WARREN, Merthen Manor, Constantine, Helston, black gelding, **Kaffir Chief,** foaled 1909 ; s Result, d Kaffir Girl, s d Traylos.

II. (£3.)- W. L. HOSKEN, Pulsack, Hayle, chestnut, **Ginger.** foaled 1906.

CLASS 45.—*Mare or Gelding, jumping over the course in the best form on the fourth day of the Show.* [10 entries.]

I. (£10.)—T. AND W. SINGER, High House, Corsley, Warminster, **Tiny White.**

II. (£5.) T. GLENCROSS, The Loose Box, Weston-super-Mare, bay mare, **Kitty.**

III. (£2.) J. GLENCROSS, Garth House, Weston-super-Mare, Somerset, chestnut mare, **Lady**, 8 years.

R.- E. F. DAMERELL, Colebrook Farm, Plympton, Devon.

(The First Prize in Class 46 was given by the Cornwall Local Committee.)

CLASS 46.—*Mare or Gelding, the property of a resident in Cornwall, jumping over the course in the best form on the fourth day of the Show.* [5 entries.]

I. (£10.)—F. W. ROUSE, Lanlivery, Lostwithiel, Cornwall, chestnut mare, **Pretty Polly,** foaled 1908 ; s Amusement.

II. (£5.)—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Speculation,** foaled 1904, bred by the late Sir L. Molesworth, Trewarthinick, Grampound Road.

III. (£2.)—J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Fidget**

R.—H. MANN, JUN., Penwarne, Falmouth, cream, **Queenie.**

CLASS 47.—*Mare or Gelding, jumping highest on the fifth day of the Show.* [10 entries.]

I. (£10.)—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Progress,** foaled 1905, bred by J. Filkins, Pengelly, Grampound ; s Deemster.

II. (£5.)—T. AND W. SINGER, High House, Corsley, Warminster, **Tiny White.**

III. (£2.)—T. GLENCROSS, The Loose Box, Weston-super-Mare, bay mare, **Blink Bonny.**

(The First Prize in Class 48 was given by the Cornwall Local Committee.)

CLASS 48.—*Mare or Gelding, the property of a resident in Cornwall, jumping highest on the fifth day of the Show.* [5 entries.]

I. (£10.)—J. T. ROBERTS, Pomeroy, Grampound Road, bay mare, **Kitty.**

II. (£5.)—H. H. BISHOP, Tregellas, Grampound Road, bay mare, **Progress,** foaled 1905, bred by J. Filkins, Pengelly, Grampound ; s Deemster.

III. (Bronze Medal).—H. MANN, JUN., Penwarne, Falmouth, cream, **Queenie.**

CHAMPION CLASS.

CLASS 49.—*Mare or Gelding, any height, having won a Prize in Classes* 38 *to* 48, *jumping over the course in the best form on the fifth day of the Show.*

I. (£20.)—T. AND W. SINGER, High House, Corsley, Warminster, **Nomination.**

R.—T. GLENCROSS, The Loose Box, Weston-super-Mare, bay mare, **Kitty.**

CATTLE

DEVON.

(£10 towards the prizes in Classes 50 to 56 was given by the Devon Cattle Breeders' Society.)

CLASS 50.—*Devon Cow, in-Milk, calved before* 1910. [4 entries.]

I. (£10.)—MRS. A. C. SKINNER AND SON, Pound, Bishops Lydeard, **Pound Fillpan 2nd** (23040), born 23rd September, 1908; s Capton Ploughboy (4923), d Fillpan (17196), s d Johnny-Come-Quick (3458).

II. (£5.)—J. L. HUXTABLE, Overton, Bishops Tawton, **Trimstone Rose,** born January, 1904, bred by E. Anderton, Trimstone, West Down; s Sire the 6th of Bradfield (4298), d Bradfield Rose 5th (17249), s d Royalist 2nd of Pound (3807).

III. (Bronze Medal).—THE VISCOUNT PORTMAN, Bryanston, Blandford, Dorset, **Bryanston Muriel,** born 11th February, 1906; s Afterthought (3375), d Music (15882).

R.—M. J. KIDNER, Fennington, Taunton, **Zenobia 20th,** born 22nd March, 1903, bred by W. Kidner, Stoke Holy Cross, Norwich; s Hestercombe May Day (4214), d Zenobia 10th (16336), s d Councillor (3407).

CLASS 51.—*Devon Heifer, in-Milk, calved in* 1910.—*First prize* £10—*second*, £5—*third*, £2.

[NO ENTRY.]

CLASS 52.—*Devon Heifer, calved in* 1911. [6 entries.]

I. (£10.)—E. CLATWORTHY, Cutsey, Trull, Taunton, **Cherry,** born 15th February, bred by C. L. Hancock, Cothelstone, Taunton; s Crusador (4954), d Cothelstone Chaff, s d Bickley Opal (4533).

II. (£5.)—VISCOUNT PORTMAN, Bryanston, **Careless,** born 15th January, bred by the late Hon. E. W. B. Portman, Hestercombe, Taunton; s Filleigh Gay Boy (6364), d Hestercombe Contessa (22955), s d Cæsar (5174).

III. (£2.)—VISCOUNT PORTMAN, **Print,** born 23rd March, bred by the late Hon. E. W. B. Portman, Hestercombe, Taunton; s Stockleigh Masterpiece (6548), d Hestercombe Poplin (21609), s d Pound Pink 'Un (5350).

R.—VISCOUNT PORTMAN, **Fashion,** born 16th January, bred by the late Hon. E. W. B. Portman, Hestercombe, Taunton; s Filleigh Gay Boy (6364), d Fuchsia (22950), s d Carolus (5450).

R. for Special*—T. WARNE, Trevisquite Manor, St. Mabyn, S.O., Cornwall, **Daisy 18th** (25474), born 20th January; s Stockleigh Magnum Bonum (6217), d Daisy 17th (19969).

---

* Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 50 to 53, the property of a resident in Cornwall.

CLASS 53.—*Devon Heifer, calved in* 1912. [9 entries.]

I. (£10).—L. H. ALFORD, Horridge, Ashford, North Devon, **Horridge Belle,** born 25th February; s Hall Curly Boy (6732), d Suffragette (22480), s d Capton Sunny Jim (5192).

II. (£5.)—E. CLATWORTHY, Cutsey, Trull, Taunton, **Cutsey Bella,** born 11th January; s Roadwater Prince (6534), d Cutsey Brassey 5th, s d Duke of Thoverton (4388).

III. (£2) and Special (£3)*—T. DYER, Tencreek, Liskeard, Cornwall, **Rose 23rd,** born 2nd January; s Stockleigh Magnum Bonum (6217), d Rose 7th (18795), s d Milkman 2nd of Pound (4264).

R.—VISCOUNT PORTMAN, Bryanston, Blandford, **Poppy,** born 21st February; s Bryanston Rival (6636), d Patience, s d Rodney (5366).

H.C.—VISCOUNT PORTMAN, **Bryanston Maud**, born 25th April; s Bryanston Amber (6271), d Bryanston Muriel (22302), s d Afterthought (3375).

C.—E. CLATWORTHY, Cutsey, Trull, Taunton, **Ladylike,** born 4th January; s Roadwater Prince (6534), d May Lass (19519), s d Hestercombe May Day (4214).

CLASS 54.—*Devon Bull, calved in* 1909 *or* 1910. [1 entry.]

I. (£10.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Guardian** (6998), born 21st January, 1910; s Bryanston Golden Rod (5977), d Gladys, s d Eureka (4189).

CLASS 55.—*Devon Bull, calved in* 1911. [7 entries.]

I. (£10.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Marmion,** born 23rd March, bred by the late Hon. E. W. B. Portman, Hestercombe, Taunton; s Stockleigh Masterpiece (6548), d Hestercombe Pink (22268), s d Pound Pink 'Un (5350).

II. (£5.) and Special (£5)†—W. BRENT, Clampit, Callington, Cornwall, **Ford Plumper** (7381), born 29th April, bred by T. W. Smith, Ford, Eastdown, Barnstaple; s Ford Progression (5780), d Prudence (20353), s d Royal Mint (3953).

III. (£2) and **R.** for Special†—G. MARTYN, Tregirls, Padstow, Cornwall **Nadrid Comet** (7469), born 7th September, bred by F. S. Yendell, Nadri, South Molton; s Hestercombe Pollax (6766), d Nadrid Curly 33rd (23174), s d Compton Douglas (5733).

R.—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Pageant,** born 21st January; s Bryanston Pitcher, (5980), d Bryanston Columbine (22974), s d Rodney (5366).

---

* Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 50 to 53, the property of a resident in Cornwall.

† Given by the Royal Cornwall Agricultural Association, for the best Bull in Classes 54 to 56, the property of a resident in Cornwall.

CLASS 56.—*Devon Bull, calved in* 1912. [9 entries.]

I. (**£10.**)—MRS. A. C. SKINNER AND SON, Pound, Bishops Lydeard, **Pound Cowboy,** born 11th January; s Lord Bob (7179), d Pound Cowslip 6th (23865) s d Pound Gladiator (6069).

II. (**£5.**)—E. CLATWORTHY, Cutsey, Trull, Taunton, **Kenerel,** born 3rd January, bred by A. Bowerman, Capton Farm, Williton; s Capton Showman (6640), d Capton Plum (23245), s d Capton Bellringer (4911).

III. (**£2.**)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Boxer,** born 4th January; s Bryanston Pheasant (6635), d Bryanston Goodwill (23816), s d Bryanston Ajax (5974).

R.—W. BRENT, Clampit, Callington, Cornwall, **Clampit Gallant,** born 10th April; s Pound Monitor (6869), d Clampit Gaiety (19288), s d Yeoman (4326).

V.H.C.—VISCOUNT PORTMAN, **Bryanston Rameses,** born 1st February; s Bryanston Rival (6366), d Bryanston Amy (22809), s d Compton Champion (6004).

H.C.—VISCOUNT FALMOUTH, Tregothnan, Truro, **Bellman,** born 13th June; s John Peel (6797), d Lovelock (21370), s d Drosera (4565).

C.—T. DYER, Tencreek, Liskeard, Cornwall, **Avercombe Corrector,** born 6th February, bred by J. Y. Verney, Avercombe, Bishop's Nympton, South Molton, Devon; s Wood Primate (6244), d Wilful 2nd (C. 132), s d Clampit Candidate (5723).

SOUTH DEVON

(The Prizes in Class 57 were given by the South Devon Herd Book Society.)

CLASS 57.—*South Devon Cow, in-milk, calved before* 1910. [8 entries.]

I. (**£10**) and **R.** for Special.*—J. D. ELLIS, Dunstone, Yealmpton, Devon **Magnet** (6494 S.D.H.B.), born 12th May, 1905; s Cronji (1423), d Gentle 4th (3437), s d Lo-Ben (625).

II. (**£5.**)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, **Princess 3rd** (6752), born 28th November, 1905, bred by J. Skinner, Tidwell, Staverton; s Big Ben (1593), d Princess (3891), s d Masher (769).

III. (**£2**) and Special (**£3**)†—W. E. CATTLEY, Clowance Barton, Crowan, Praze, **Roseland Gentle,** born 8th November, 1907, bred by the late Sir L. Molesworth, Bart., Trenarthenick, Grampound Road; s Trescowe Nugget (2254), d Roseland Snow Drop (4583).

R. and **R.** for Special*—C. A. HANSON, Fowey Hall, Fowey, Cornwall, **Orange Girl** (6249), born 8th March, 1904, bred by W. P. Vosper, Merafield, Plympton; s Old Fashion (653), d Cowslip 4th (3923), s d Doncaster (27).

---

* Given by Charles A. Hanson, Esq., Fowey Hall; Cornwall, Alderman of the City of London, a Challenge Cup for the best Cow in Milk, in the South Devon Classes, to be won three times in succession or four times altogether, before becoming the property of the winner.

† Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 57 to 60, the property of a resident in Cornwall.

Class 58.—*South Devon Heifer, in-Milk, calved in* 1910. [4 entries.]

I. (**£10**) and Special*—D. Camp and Sons, Widland, Modbury, Devon, **Orange Girl** (9775), born 1st March; s Henry 8th (3179), d Widland Sunbeam 3rd (7606), s d Happy Harry (2632).

II. (**£5.**)—F. B. Mildmay, M.P., Flete, Ivybridge, **Lilian**, born 18th February; s Henry 8th (3179), d Lady Bird (7916), s d Duke of Devonshire.

III. (**Bronze Medal**).—F. B. Mildmay, M.P., **Lilly**, born 23rd January; s Henry 8th (3179), d Love Bird (7917), s d Duke of Devonshire.

R.—J. Williams, Condurrow Farm, Camborne, Cornwall, **Queenie** (10483), born 15th September; s Rew Champion (2733), d Star (6945), s d Earl Elms (1863).

Class 59.—*South Devon Heifer, calved in* 1911. [9 entries.]

I. (**£10.**)—F. B. Mildmay, M.P., Flete, Ivybridge, **Camelia 2nd**, born 26th February; s Bulleigh Prince (3109), d Camelia (8591), s d Golden King.

II. (**£5.**)—B. Butland, Leigham, Plympton, **Handsome 10th** (10570), born 12th May; s Henry 7th (3178), d Handsome 6th (8301), s d Lo-Ben (2167).

III. (**£2.**)—B. Butland, **Beauty 18th** (10565), born 30th April; s Henry 7th (3178), d Beauty 11th (6948), s d Leigham Champion (1667).

R.—W. H. Pearse, Stokenham Barton, Kingsbridge, Devon, **Jessie 1st**, born 3rd January; s Coleridge Hero (3119), d Jessie (6694), s d Wembury Boy (1782).

V.H.C.—W. and H. Whitley, Primley Farm, Paignton, **Primley Edna** (11257), born 18th January; s What I Wanted (1388), d Dina 2nd (5963), s d Forager (1447).

Class 60.—*South Devon Heifer, calved in* 1912. [9 entries.]

I. (**£10.**)—B. Butland, Leigham, Plympton, **Handsome 12th**, born 4th January; s Henry 7th (3178), d Handsome 3rd (6392), s d Leigham Champion 1667).

II. (**£5.**)—B. Luscombe, Langston, Kingsbridge, **Countess Maid**, born 31st March; s Leigham Sort (3198), d Countess (6010).

III. (**£2.**)—G. H. Eustice, Bezurrell, Gwinear, Hayle, **Gwinear Lass 1st** born 6th January; s Tariff Reform (3594), d Gwinear Lass 4th (9077), s d Jovial Peer 2nd (2927).

R.—C. G. Tucker, Molenich, St. Germans, **Tansey 2nd**, born 24th February; s Cherry's Tring (3111), d Tansey (8769), s d Merry Boy (2181).

V.H.C.—B. Luscombe, **Countess Girl**, born 31st March; s Leigham Sort (3198), d Countess (6010).

---

* Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 57 to 60, the property of a resident in Cornwall.

CLASS 61.—*South Devon Bull, calved in* 1909 *or* 1910. [3 entries.]

I. (**£10**) and Special (**£5**)*—J. LEACH, Carwen, Lanreath, Duloe, R.S.O., **New Year's Gift** (3505), born 1st January, 1909, bred by W. H. Pain, High House, Kingsbridge; s Charleton Hero (1831), d Primrose (5336).

II. (**£5**) and **R.** for Special*—J. M. BENNETTS, Killiganoon, St. Feock, Cornwall, **Royal Duke** (3889 S.D.H.B.), born 3rd January, 1910, bred by W. Coaker, Charleton Court, Kingsbridge, Devon; s Duke (1433 S.D.H.B.), d Polly 7th (7625 S.D.H.B.), s d Eclipse (2123 S.D.H.B.).

III. (**Bronze Medal**).—G. H. EUSTICE, Bezurrell, Gwinear, Hayle, **Tariff Reform** (3594), born 2nd February, 1909, bred by J. Wakeham, South Brent; s Ley Marquis (2941), d Mabel (6262), s d Masher (769).

CLASS 62.—*South Devon Bull, calved in* 1911. [3 entries.]

I. (**£10.**)—W. AND H. WHITLEY, Primley Farm, Paignton, **Primley Excelsior** (4153), born April 2nd; s What I Wanted (1388), d Coquette (6374), s d Babland Boy (1793).

II. (**£5.**)—J. K. HARRIS, Polgreen, St. Veep, Lostwithiel, **Nobleman** (4125) born 27th August; s Rising Sun (2478), d Princess (8491), s d Princess (5394).

III. (**Bronze Medal**).—W. E. CATTLEY, Clowance Barton, Praze, **Bourton Best Man** (3986), born 16th March, bred by J. Wood, Bourton, Totnes, Devon; s Masher (769), d Bourton Cherry (5731).

CLASS 63.—*South Devon Bull, calved in* 1912. [6 entries.]

I. (**£10.**)—B. LUSCOMBE, Langston, Kingsbridge, **Langston King**, born 5th April; s Leigham Sort (3198), d Wonwell Cherry 4th (7840).

II. (**£5.**)—W. H. A. TUCKER, Trezare, Fowey, Cornwall, **Dairyman**, born 4th January, bred by B. Luscombe, Langston, Kingston, Kingsbridge; s Leigham Sort (3198), d Nosegay (8527), s d Kingston Lad (2657).

III. (**£2.**)—W. H. COPPLESTONE AND SON, Polscoe, Lostwithiel, **Monarch**, born 10th February; s Merryman (3497), d Mitze (7664), s d Masterpiece (2430).

R.—W. AND H. WHITLEY, Primley Farm, Paignton, **Primley Fortifier** (Vol. xiii.), born 27th March; s What I Wanted (1388), d Primley Beauty (8842), s d Elector (2354).

SHORTHORN.

(The 1st Prize in Class 64 was given by the Shorthorn Society and the 1st Prize in Class 65 by the Dairy Shorthorn (Coates's Herd Book) Association).

CLASS 64.—*Pedigree Shorthorn Dairy Cow, in-Milk, four years old and upwards on May* 27, *eligible for, and entered in Coates's Herd Book, or Pedigree sent for such entry previous to the Show,*

---

* Given by the Royal Cornwall Agricultural Association for the best Bull in Classes 61 to 63, the property of a resident in Cornwall.

and not having previously won a similar prize given by the above-named Society or Association in 1913, *milked in the ring before judging, under Conditions* 63. [4 entries.]

I. (£10.)—C. R. W. ADEANE, Babraham Hall, Cambs., red, **Babraham Countess Clara** (Vol. lvii., p. 423), born 28th October, 1906; s Prince Pericles 24th (86953), d Babraham Countess 2nd, s d Edwin (70370).

II. (£5.)—LORD LUCAS, Wrest Park, Ampthill, Beds., light roan, **Charity 23rd,** born 26th October, 1905, bred by J. Mashiter, Deepthwaite House, Milnthorpe; s Royal Stone (79843), d Charity 22nd, s d Bridegroom 3rd (68271).

R.—W. J. HOSKEN, Pulsack, Hayle, Cornwall, red and little white, **Carnation 30th**, born 10th December, 1905; s Hayle Victor 3rd (86170), d Carnation 29th, s d Royal Sovereign (77756).

CLASS 65.—*Pedigree Shorthorn Dairy Cow, in-Milk, under four years old on May* 27, *eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize given by the above-named Society or Association in* 1913, *milked in the ring before judging, under Conditions* 63. [4 entries.]

I. (£10.)—C. R. W. ADEANE, Babraham Hall, Cambs., roan, **Babraham Fog** (Vol. lvii., p. 425), born 13th January, 1910; s Knight of Ivanhoe (92167), d Mist, s d Archer (80352).

CLASS 66.—*Shorthorn Cow in-Milk, calved before* 1910. [4 entries.]

I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, red roan, **Lady Dorothy 39th,** born 18th March, 1903, bred by W. Moir, Shadowside, Inverurie, Aberdeenshire; s Pride of the Realm (75251), d Lady Dorothy 38th, s d Emperor (67008).

II. (£5.)—Z. A. BICE, Gustiveor, St. Colomb Minor, red and white, **Village Ringlet,** born 13th January, 1906, bred by W. T. Garne & Son, Aldsworth, Gloucestershire; s Village Beau, d Ringlet Royal, s d Royal Nottingham.

III. (**Bronze Medal**).—A. W. JULIAN, South Treviddo, Liskeard, Cornwall, roan, **Ann of Lancaster 13th,** born 25th February, 1908, bred by G. Hill, Little Haddo, Newburgh, Aberdeenshire; s Major (95959), d Ann of Lancaster 10th, s d Huntley (83743).

CLASS 67.—*Shorthorn Heifer in-Milk, calved in* 1910. [5 entries.]

I. (£10) and R. for Special*—W. J. HOSKEN, Pulsack, Hayle, Cornwall, red, **Hayle Golden Wreath,** born 4th May, 1910; s Barteliver Trump (101453), d Cornish Down, s d Hayle Count (91693).

II. (£5.)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Tongswood Edith,** born 21st January; s Spicy Hope (104022), d Strawberry Dame, s d Prince Benedict (86904).

---

* Given by the Royal Cornwall Agricultural Association for the best Shorthorn Cow or Heifer in Classes 66 to 69, the property of a resident in Cornwall.

III. (**Bronze Medal**).—C. E. GUNTHER, roan, **Olive Leaf**, born 22nd October, 1910, bred by C. Morgan Richardson, Rhoshill, Pembrokeshire; s Montcalm (86680), d Olivette, s d Moonlight (75110).

R.—W. M. CAZALET, Fairlawne, Tonbridge, roan, **Clipper Keepsake**, born 20th March, 1910, bred by C. Napier, Nether Dallachy, Boyndie, Banff; s Violet's Victory (85001), d Boyne Clipper (Vol. lvii., p. 1002), s d Watchman (71828).

CLASS 68.—*Shorthorn Heifer, calved in* 1911. [7 entries.]

I. (**£10**) and Special (**£3**).*—W. J. HOSKEN, Pulsack, Hayle, Cornwall, roan, **Cornish Maid 3rd**, born 18th February; s Good Boy (102394), d Cornish Maid 2nd, s d Barteliver General (89003).

II. (**£5.**)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, red and little white, **Tongswood Missie 2nd**, born 19th February; s Orphan Stamp (103261), d Tatton Missie 3rd, s d Royal Pippin (96936).

III. (**£2.**)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, roan, **Bess of Bilsington**, born 4th February; s Golden Cloud (108750), d Bess 9th (Vol. lviii., p. 380), s d Royal Prince (93268).

R.—W. J. HOSKEN, red, **Hayle Countess 6th**, born 1st August; s Golden Cloud 2nd (108751), d Royal Countess, s d Royal Sovereign (77756).

H.C.—W. M. CAZALET, Fairlawne, Tonbridge, dark roan, **Fairlawne Beauty**, born 2nd February; s Bold Emperor (107959), d Missie 6th (Vol. lviii., p. 464), s d Montrave Excellence (96142).—C. E. GUNTHER, red, **Tongswood Fairy**, born 6th April; s Lord Augustus (109216), d Red Fairy, s d Sailor Boy (84683).—T. E. WATSON, Catsash, Newport, Mon., roan, **Beatrice 4th**, born 14th January; s Wanderer's Chief (80210), d Beatrice 3rd, s d Duke of Tyne (74425).

CLASS 69.—*Shorthorn Heifer, calved in* 1912. [7 entries.]

I. (**£10.**)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, white, **Bilsington Rosemary 233rd**, born 18th February; s Golden Cloud (108750), d Rosemary 232nd (Vol. lvii., p. 950), s d Lovat Scout (99485).

II. (**£5.**)—W. J. HOSKEN, Pulsack, Hayle, Cornwall, roan, **Hayle Dawn**, born 15th January; s Golden Cloud 2nd (108751), d Cornish Dawn, s d Hayle Count (91693).

III. (**£2.**)—W. M. CAZALET, Fairlawne, Tonbridge, white, **Gipsy Countess 3rd**, born 2nd January, bred by A. Morrison, Phingask, Fraserburgh; s Phingask Comet (109627), d Gipsy Countess 2nd, s d Golden Mascot (95330).

R.—W. J. HOSKEN, red, **Hayle Golden Wreath 2nd**, born 10th May; s Cornish Monarch (108261), d Hayle Golden Wreath, s d Barteliver Trump (101453).

C.—A. W. JULIAN, South Treviddo, Liskeard, Cornwall, roan, **Lady Charming**, born 21st January; s Ace of Hearts (107580), d Pierrepont Charmer, s d White Emperor (101104).—T. E. WATSON, Catsash, Newport, Mon. roan, **Fanny C.**, born 13th February; s French Marksman (111824), d Cowley Fanny 3rd, s d Gold Plate (88745).

---

* Given by the Royal Cornwall Agricultural Association for the best Shorthorn Cow or Heifer in Classes 66 to 69, the property of a resident in Cornwall.

CLASS 70.—*Shorthorn Bull, calved in* 1909 *or* 1910. [9 entries.]

I. (**£10**) and Champion (**£10**)*—R. STRATTON, The Duffryn, Newport, Mon., roan, **Mischief** (112570), born 30th March, 1910, bred by Garne & Son, Aldsworth, Glos.; s Pride of Ablington (103345), d Misfortune, s d Bapton Crown (78288).

II. (**£5.**)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Windmill Marquis**, born 5th April, 1910, bred by R. W. Bell, Windwill, Coagh; s Aristocrat (104558), d Strowan Marchioness 10th, s d Cock Robin (80728).

III. (**£2.**)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, white, **Daylight** (108349), born 17th March, 1910; s Daystar (101974), d Tehidy Royal Carnation 8th, s d Royal Estate (89925).

R.—C. E. GUNTHER, white, **Bold Broad Hooks**, born 4th April, 1910, bred by E. Cocy, Ardeen, Larne; s Special Stamp (100731), d Roan Butterfly, s d Watchword (68063).

H.C.—R. NICHOLAS, Menagissey Farm, Mount Hawke, Scorrier, dark roan, **Phantom Monarch**, born 13th May, 1910, bred by J. Horlick, Cowley Manor, Cheltenham; s Roan Monarch (100310), d Shipton Pride, s d Daisy Prince (88334).

C.—P. T. ADAMS, Trenear, Breage, Helston, roan, **Toiler**, born 28th March, 1910, bred by the late W. James, Barteliver, Grampound Road; s Barteliver Recollection (101450), d Daisy J. 8th, s d Jacobite (76910).

CLASS 71.—*Shorthorn Bull, calved in* 1911. [7 entries.]

I. (**£10.**)—LORD FITZHARDINGE, Berkeley Castle, Berkeley, roan, **Aldsworth Pride** (110732), born 12th January, bred by W. T. Garne & Son, Aldsworth, Northleach; s Pride of Ablington (103345), d Crown Princess, s d Village Coronet (9748).

II. (**£5**) and Special (**£5**)†—W. J. HOSKEN, Pulsack, Hayle, Cornwall, roan, **Damory Landmark**, born 27th April, bred by H. J. S. Tory, Damory Court, Blandford; s Bright Silver (91010), d Roan Dorothy, s d Body Guard (78423).

III. (**£2**) and **R.** for Special*—W. J. HOSKEN, roan, **Damory Premier 2nd**, born 16th April, bred by H. J. S. Tory, Damory Court, Blandford; s Coleshill Ranger (91287), d Plume, s d Treasurer (78015).

R.—R. J. BALSTON, Bilsington Priory, Ashford, Kent, dark roan, **Red Abbot**, born 19th March; s Golden Cloud (108750), d Red Beauty (Vol. lvii., p. 463), s d Ruby's Knight (93294).

H.C.—W. J. HOSKEN, roan, **Hayle Marksman**, born 15th February; s Golden Cloud 2nd (108751), d Lady Lofty, s d Norman (73140).

C.—Z. A. BICE, Gustiveor, St. Columb Minor, red roan, **Edgcote King**, born 18th June, bred by Wallace & Gresson, Wardington Gate Farm, Edgcote, Banbury; s Bletchley King, d Maria, s d Bapton Shamrock.

---

* Given by the Shorthorn Society for the best Shorthorn Bull in Classes 70 to 72, entered in, or eligible for entry in, Coates's Herd Book.

† Given by the Royal Cornwall Agricultural Association for the best Shorthorn Bull in Classes 70 to 72, the property of a resident in Cornwall.

CLASS 72.—*Shorthorn Bull, calved in* 1912. [6 entries.]

I. (**£10.**)—LORD FITZHARDINGE, Berkeley Castle, Berkeley, roan, **Brave Marquis**, born 8th January; s Stranraer Marquis (104102), d Blanche Rose 36, s d Loyal Waterloo (83983).

II. (**£5.**)—R. STRATTON, The Duffryn, Newport, Mon., roan, **Highflyer** born 20th March; s Pegasus (106477), d Maiden's Blush, s d Renown (93084),

III. (**£2.**)—W. J. HOSKEN, Pulsack, Hayle, Cornwall, roan, **Hayle Landmark**, born 5th April; s Sir Milford 3rd (103962), d Morning Star, s d Rising Star (73423).

R.—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Tongswood Juryman**, born 20th February; s Tongswood Bamton (107295), d Broad Hooks Princess, s d Marksman (70946).

C.—W. AND H. WHITLEY, Primley Farm, Paignton, roan, **Primley Egbert**, born 9th January; s Primley Clint (109685), d Crown Gem (Vol. liii., p. 718), s d Royal Mint (87199).

(The 1st Prize in Class 73 was given by the Shorthorn Society and the 2nd Prize by the Royal Cornwall Agricultural Association, under Conditions 64.)

CLASS 73.—*Best Shorthorn Bull entered in Class* 72, *the property of a resident in Cornwall or Devon.* [3 entries.]

I. (**£10.**)—W. J. HOSKEN, Pulsack, Hayle, Cornwall, roan, **Hayle Landmark**, born 5th April; s Sir Milford 3rd (103962), d Morning Star, s d Rising Star (73423).

II. (**£5.**)—W. AND H. WHITLEY, Primley Farm, Paignton, roan, **Primley Egbert**, born 9th January; s Primley Clint (109685), d Crown Gem (Vol. liii., p. 718), s d Royal Mint (87199).

HEREFORD.

CLASS 74.—*Hereford Cow, in-Milk, calved before* 1910. [2 entries.]

I. (**£10**) and Champion (**£10**)*—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley Primula**, born 27th January, 1909; s Shelsley (26480), d Primrose, s d Kinnersley King (20116).

II. (**Silver Medal**).—D. A. THOMAS, Llanwern, near Newport, Mon., **Buckenhill Lass**, born 23rd March, 1909, bred by the late R. Phipps, Bromyard; s Success (26513), d Wilton Lass (Vol. xxxviii., p. 667), s d Locarno (20797).

CLASS 75.—*Hereford Heifer, in-Milk, calved in* 1910. [3 entries.]

I. (**£10.**)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley Florence**, born 11th January; s Eaton Sovereign (26832), d Florence, s d Gambler (20639).

---

* Given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 74 to 77.

Class 76.—*Hereford Heifer, calved in* 1911. [5 entries.]

I. (£10) and R. for Champion*—A. E. Hughes, Wintercott, Leominster, **Misty,** born 22nd January; s Ronald (26450), d Margery, s d Pearl King (24192).

II. (£5.)—D. A. Thomas, Llanwern, near Newport, Mon., **Pansy,** born 1st January, bred by J Bounds, Low Farm, Pembridge, Hereford; s Lancer (26245), d Pansy 8th (Vol. xxxv., p. 212), s d Lucifer (20172).

III. (Bronze Medal).—K. W. Milnes, Stanway Manor, Church Stretton, Shropshire, **Gem's Ruby,** born 4th January; s Bloodstone (27351), d Gemima, s d Goschen (17284).

R.—D. A. Thomas, **Kohinoor,** born 5th January; s Pandorus (23658), d Royal Gem (Vol. xxxiv., p. 673), s d Francis (13800).

Class 77.—*Hereford Heifer, calved in* 1912. [7 entries.]

I. (£10.)—J. G. Cooke-Hill, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley Queen 2nd,** born 14th January; s Shelsley (26480), d Gipsy Queen, s d Evelthon (20616).

II. (£5.)—K. W. Milnes, Stanway Manor, Church Stretton, Shropshire, **Stanway Belle,** born 24th January, s North Star (27725), d Best Love, s d Best Man (23498).

III. (£2.)—D. A. Thomas, Llanwern, near Newport, Mon., **Plume,** born 5th January; s Onsland (27741), d Plumstone (Vol. xxxix., p. 747), s d Whittern Marksman.

R.—K. W. Milnes, **Gem's Radiance,** born 6th February; s Sir James (26489) d Gemima, s d Goschen (17284).

H.C.—de F. Pennefather, Kinnersley Castle, Herefordshire, **Heiress 4th,** born 10th January; s Albert (25896), d Heiress (Vol. xxxix., p. 628), s d Columbus (24490).—D. A. Thomas, **Europa,** born 4th February, bred by Harris Bros., Sheriff's Kington, Hereford; s Penda (27091), d Blush (Vol. xxxviii., p. 494), s d Maximus.

Class 78.—*Hereford Bull, calved in* 1909 *or* 1910. [3 entries.]

I. (£10) and Champion (£10).†—G. Butters, Hill House, Newton, Leominster, **Sailor King** (28687), born 31st January, 1910; s Sailor Prince (26465), d Lassie (Vol. xxxvi., p. 198), s d Scot (23134).

II. (£5.)—Sir J. R. G. Cotterell, Bart., Garnons, Hereford, **Comet** (28175), born 12th April, 1910; s All Right (24348), d Stella, s d Marcellus (22353).

III. (Bronze Medal).—J. G. Cooke-Hill, Shelsley Bank, Stanford Bridge, Worcester, **Cameron,** born 12th January, 1910, bred by Captain E. L. A. Heygate, Buckland, Leominster; s Highland Prince (25437), d Ivy, s d Steelclad (17557).

---

* Given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 74 to 77.

† Given by the Hereford Herd Book Society for the best Bull in Classes 78 to 80

CLASS 79.—*Hereford Bull, calved in* 1911. [8 entries.]

I. (**£10**) and **R.** for Champion*—G. BUTTERS, Hill House, Newton, Leominster, **Charity** (28990), born 11th January; s Sailor Prince (26465), d May (Vol. xxxvi., p. 199), s d Scot (23134).

II. (**£5.**)—DE F. PENNEFATHER, Kinnersley Castle, Herefordshire, **Ringer,** born 7th January; s Albert (25896, Vol. xxxix., p. 4), d Ringlet (Vol. xxxvii., p. 731), s d Baronet (20456).

III. (**£2.**)—P. COATS, Sheepcote, Clifford, Herefordshire, **Gay Boy,** born 23rd January; s Provost (27125), d Rosie (Vol. xxxviii., p. 342), s d Bage Protector (21167).

R.—W. B. TUDGE, Stepaside, Onibury, Shropshire, **Stepaside,** born 9th January; s Minoru (27700), d Gwendoline (Vol. xli., p. 801), s d Commandant (22040).

H.C.—SIR J. R. G. COTTERELL, BART., Garnons, Hereford, **First Lord,** born 14th April; s Administrator (27298), d Ladylove, s d Old Sort (24826).—EARL OF COVENTRY, Croome Court, Worcester, **Golden Sprig,** born 24th January; s Lama (23550), d Golden Spray (Vol. xxxviii., p. 361), s d Queen's Guard (23095).

CLASS 80.—*Hereford Bull, calved in* 1912. [8 entries.]

I. (**£10.**)—A. E. HUGHES, Wintercott, Leominster, **Lemberg,** born 6th April; s Lucus (27673), d Lady Emly, s d Portrane (25659).

II. (**£5.**)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley King 2nd,** born 8th January; s Eaton Sovereign (26832), d Shelsley Primula, s d Shelsley (26480).

III. (**£2.**)—P. COATS, Sheepcote, Clifford, Herefordshire, **Sheepcote Gladiator,** born 18th January; s Milton (25571), d Ladybird 2nd (Vol. xli., p. 292), s d Endale (21366).

R. & H.C.—SIR J. R. G. COTTERELL, BART., Garnons, Hereford, **Braggart,** born 17th January; s Administrator (27298), d Brownie, s d Royal Ringer (26458).

SUSSEX.

CLASS 81.—*Sussex Cow or Heifer, in-Milk, calved before* 1911.—*First prize,* £10—*second,* £5—*third,* £2.

NO ENTRY.

CLASS 82.—*Sussex Heifer, calved in* 1911. [1 entry.]

I. (**£10**) and Special†—W. A. THORNTON, Lock, Partridge Green, Sussex. **Lock Heedless 3rd,** born 18th January, 1911; s Ben of Lock (2279), d Penhurst Heedless (8549), s d Young Benares (1702).

---

* Given by the Hereford Herd Book Society for the best Bull in Classes 78 to 80.

† Given by the Sussex Herd Book Society, a Silver Medal for the best Cow or Heifer in Classes 81 to 83.

CLASS 83.—*Sussex Heifer, calved in* 1912. [2 entries.]

I. (**£10**) and **R.** for Special*—W. G. FLADGATE, Apsley, Thakeham, Pulborough, Sussex, **Apsley Nora 3rd,** born 20th January; s Shillinglee Bewbush 6th (2400), d Theele Nora (9209), s d Gladsome Prince 3rd (1777).

II. (**Silver Medal**).—W. A. THORNTON, Lock, Partridge Green, Sussex, **Lock Darkey 5th,** born 2nd January; s Northchapel Premier (2645), d Darkey 8th of Lock (12690), s d Tutsham Toreador (2016).

CLASS 84.—*Sussex Bull, calved in* 1909, 1910, *or* 1911. [1 entry.]

I. (**£10**) and Special†—W. G. FLADGATE, Apsley, Thakeham, Pulborough, Sussex, **Apsley Albert 2nd** (2706), born 21st June, 1910; s Albert 2nd (2052), d Apsley Daisy (9634), s d Rochester Twin (1928).

CLASS 85.—*Sussex Bull, calved in* 1912. [2 entries.]

I. (**£10**) and **R.** for Special†—W. A. THORNTON, Lock, Partridge Green, Sussex, **Lock Toreador,** born 16th January; s Ben of Lock (2279), d Apsley Carrie 3rd (11803), s d Tutsham Toreador (2016).

II. (**Silver Medal**).—W. G. FLADGATE, Apsley, Thakeham, Pulborough, Sussex, **Apsley Bewbush 4th,** born 29th February; s Shillinglee Bewbush 6th (2400), d Fairy (8818), s d Drungewick Prebble 2nd (1877).

ABERDEEN-ANGUS.

(The 1st Prize in Class 86 was given by the English Aberdeen-Angus Cattle Association).

CLASS 86.—*Aberdeen-Angus Cow or Heifer, in-Milk, calved before 1st December*, 1910. [1 entry.]

I. (**£10.**)—C. L. PRIOR, Grumblethorpe Hall, Louth, Lincs, **Fair Peggy,** born 30th January, 1909, bred by D. Arnot, Edzell Mains; s Justice of Ardargie (25821), d Folly's Favourite, s d St. Elmo of Letham.

CLASS 87.—*Aberdeen-Angus Heifer, calved on or after 1st December*, 1910. [1 entry.]

I. (**£10.**)—J. J. CRIDLAN, Maisemore Park, Gloucester, **Violet of Maisemore** (48644), born 9th January, 1911; s Everwise (24436), d Viola of Standen (38701), s d Elector of Benton (21814).

---

* Given by the Sussex Herd Book Society, a Silver Medal for the best Cow or Heifer in Classes 81 to 83.

† Given by the Sussex Herd Book Society, a Silver Medal for the best Bull in Classes 84 or 85.

CLASS 88.—*Aberdeen-Angus Heifer, calved on or after 1st December, 1911.* [8 entries.]

I. (**£10**) and Champion*—C. L. PRIOR, Grumblethorpe Hall, Louth, Lincs, **Persepha,** born 13th January, 1912, bred by D. M. MacRae, Stenhouse, Thornhill; s Everlasting of Ballindalloch (24435), d Persephone of Ballindalloch s d Bion (11454).

II. (**£5.**)—J. J. CRIDLAN, Maisemore Park, Gloucester, **Estelle of Maisemore** (50414), born 6th April, 1912 ; s Everwise (24436), d Esterel of West Wycombe (41915), s d Prince Foremost (23724).

CLASS 89.—*Aberdeen-Angus Bull, calved before 1st December,* 1911, [3 entries.]

I. (**£10**) and Champion† —SIR G. COOPER, BART., Hursley Park, Winchester, Hants, **Bandolier of Hursley** (30133), born 10th January, 1910; s Black for Ever of Ballindalloch (25338), d Blue Bell of Hursley (41818), s d Evolsurus (21908).

II. (**£5.**)—J. J. CRIDLAN, Maisemore Park, Gloucester, **Everard 2nd of Maisemore** (31730), born 3rd April, 1911 ; s Rubelate of Maisemore (28706), d Evergreen 13th (38736), s d Wizard of Maisemore (21465).

III. (**Bronze Medal**).—J. J. CRIDLAN, **Proud Ermine of Maisemore** (32451), born 8th January, 1911 ; s Proud Erme (28602), d Mabel Pride 2nd of Theakstone (44174), s d Examiner of Selaby (19107).

CLASS 90.—*Aberdeen-Angus Bull, calved on or after 1st December,* 1911 [2 entries.].

I. (**£10**) —J. J. CRIDLAN, Maisemore Park, Gloucester, **Idart of Maisemore** (33315), born 9th February, 1912; s Everwise (24436), d Tulip of Standen (45122), s d Elector of Benton (21814).

II. (**Silver Medal**).—J. J. CRIDLAN, **Esquimo of Bleaton** (33125), born 2nd March, 1912, bred by J. M. Marshall, Bleaton, Blairgowrie; s Eradiator (26805), d Erica of Ballincomb 7th (43209), s d Eloff (17758).

JERSEY.

(The Prizes in Class 91 were given by the English Jersey Cattle Society.)

CLASS 91.—*Jersey Cow or Heifer, in-Milk, entered in or eligible for entry in the English Jersey Herd Book, bred by Exhibitor, and sired in Great Britain or Ireland.* [13 entries.]

I. (**£5.**)—J. H. SMITH-BARRY, Stowell Park, Pewsey, **Flower Girl,** born 28th June, 1906 ; s Oxford Sunbeam (8650), d Lily, s d Dryden (8158).

---

* Given by the English Aberdeen-Angus Cattle Association, a Silver Medal for the best animal of opposite sex to that awarded the Gold Medal in Classes 86 to 90.

† Given by the Aberdeen-Angus Cattle Society, a Gold Medal, value £10, for the best animal in Classes 86 to 90.

II. (£3.)—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Goddington Foxglove** (Vol. xix., p. 310), born 21st April, 1905 ; s Flying Foam (7204), d Meadow Girl (Vol. xii., p. 316), s d Prism (2383).

III. (£2.)—J. Brutton, 7, Princes Street, Yeovil, Somerset, dark brown, **Yeovil Lively,** born 9th March, 1909 ; s Yeovil Sunbeam (9821), d Irish Lass (Vol. xviii., E.J.H.B.), s d Emerald (7797).

R.—Lord Rothschild, Tring Park, Tring, Herts, whole, **Patience,** born 22nd March, 1910 ; s Duke of Kent (9894), d Pearl (Vol. xxii., p. 387), s d Warder's Champion (9459).

V.H.C.—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Goddington Salvadora 6th,** born 11th January, 1910 ; s Golden Noble (9611), d Goddington Salvadora 3rd (Vol. xx., p. 318), s d Jolly Peter (8245).—J. H. Smith-Barry, whole fawn, **Last of the Lilies,** born 2nd March, 1911 ; s Fleur de Lys (9583), d Lydia Languish, s d Gay Boy (7510).—J. H. Smith-Barry, whole fawn, **Marionette,** born 3rd October, 1904 ; s Gay Boy (7510), d Marigold, s d Sportive (7037).—Lady Wernher, Luton Hoo, Luton, whole, **Carlsbad** (Vol. xxii., p. 267), born 4th December, 1907 ; s King Henry (8571), d Cutnow (Vol. xvi., p. 264), s d Bismarck's Boy (6786).

Class 92.—*Jersey Cow, in-Milk, calved before* 1910. [17 entries.]

I. (£10.)—Lord Rothschild, Tring Park, Tring, Herts, whole, **Laxton Lady,** born 5th December, 1906, bred by C. Benest, Trinity, Jersey ; s Laxton (9307), d Lady Warwick (10738 P.S.C.), s d Picton 3rd (6986).

II. (£5.)—Mrs. C. M. McIntosh, Havering Park, Romford, whole, **Briar's Rose 3rd** (14857), born 14th January, 1908, bred by Napier and Francis, St. Martin's Jersey ; s Jack of all Work (3976), d Briar's Rose 2nd (12685).

III. (£2.)—J. Brutton, 7, Princes Street, Yeovil, Somerset, light brown, **Irish Lass,** born 12th August, 1904, bred by Mrs. Spencer, Oakhill, Bath ; s Emerald (7797), d Arcadia 2nd (Vol. xv., p. 228, E.J.H.B.), s d Duke of Orleans (5868).

R.—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Honey Lass** (Vol. xxii., p. 328), born 11th July, 1906, bred by H. Lawford, St. Brelades, Jersey ; s Shy Lad (3779), d Honey Moon 4th (11882), s d Napoleon Bonaparte (2745).

V.H.C.—J. Brutton, dark brown, **Yeovil Lively,** born 9th March, 1909 ; s Yeovil Sunbeam (9821), d Irish Lass (Vol. xviii., E.J.H.B.), s d Emerald (7797). —A. Miller-Hallett, whole, **Goddington Foxglove** (Vol. xix., p. 310), born 21st April, 1905 ; s Flying Foam (7204), d Meadow Girl (Vol. xii., p. 316), s d Prism (2383).—J. H. Smith-Barry, Stowell Park, Pewsey, **Flower Girl,** born 28th June ; s Oxford Sunbeam (8650), d Lily, s d Dryden (8158).—Lady Wernher, Luton Hoo, Luton, whole, **Carlsbad** (Vol. xxii., p. 267), born 4th December, 1907 ; s King Henry (8571), d Cutnow (Vol. xvi., p. 264), s d Bismarck's Boy (6786).

H.C.—Lord Rothschild, broken, **Triangle 2nd,** born 13th December, 1905, bred by J. Marette, Jersey ; s Mourier King (9705), d Triangle (9579 P.S.C.), s d Advancer (6758).

C.—J. H. Smith-Barry, whole fawn, **Marionette,** born 3rd October, 1904; s Gay Boy (7510), d Marigold, s d Sportive (7037).—J. S. McComb, Lily Hill, Bracknell, Berks, whole, **My Brunette 8th,** born 13th April, 1909, bred by Lord Rothschild, Tring Park, Tring, Herts; s General Keata, d My Brunette.—Lord Poltimore, Poltimore Park, Exeter, whole, **Wild Berry** (Vol. xx., p. 458), born 24th August, 1906, bred by J. E. Le Marquand, Grouville; s Mabel's Raleigh (9330), d Honeysuckle (6337), s d Golden Hero (4857).—Lord Poltimore, whole, **Stacley's** (Vol. xxiii., p. 417), born 18th April, 1909, bred by C. and M. Palmer, Stewttley Grange, Leighton Buzzard; s Bolivar (9850), d Spittenard 2nd (Vol. xxi., p. 424), s d Tuddie's Champion (7385).

Class 93.—*Jersey Cow or Heifer, in-Milk, calved in* 1910.
[12 entries.]

I. (£10.)—Lord Rothschild, Tring Park, Tring, Herts, whole, **Nuriel's Oxford Daisy,** born 22nd April, 1910, bred by G. J. Querce, St. Peter's, Jersey; s Non Plaisirs Wonder (10368), d Oxford Nuriel (14643 P.S.H.S.), s d Oxford Knight (9719).

II. (£5.)—Mrs. C. M. McIntosh, Havering Park, Romford, whole, **Gipsy's Maid,** born 13th June; s Gipsy's Noble, d Merry Thought, s d Honest Lad (3756).

III. (£2.)—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Goddington Salvadora 6th,** born 11th January, 1910; s Golden Noble (9611), d Goddington Salvadora 3rd (Vol. xx., p. 318), s d Jolly Peter (8245).

R. & V.H.C.—J. H. Smith-Barry, Stowell Park, Pewsey, Wilts, whole brown, **Mauviette,** born 2nd August; s Silver Fox (10097), d Marigold, s d Sportive (7037).

V.H.C.—Lord Rothschild, Tring Park, Tring, Herts, whole, **Patience,** born 22nd March, 1910; s Duke of Kent (9894), d Pearl (Vol. xxii., p. 387), s d Warder's Champion (9459).—Lord Poltimore, Poltimore Park, Exeter, broken, **Flora,** born 12th May, 1910; s Distinction Noble 2nd (9889), d La Chasse Faury 21st (339).

Class 94.—*Jersey Heifer, in-Milk, calved in or since* 1911.
[13 entries.]

I. (£10.)—Mrs. C. M. McIntosh, Havering Park, Romford, whole, **Gloxalia** (Vol. xxiii.), born 25th March, 1911, bred by J. Joicey, Poulton Priory, Fairford, Glos.; s Fairy's Duc, d Gloxinia, s d Chief Justice (7138).

II. (£5.)—J. H. Smith-Barry, Stowell Park, Pewsey, whole fawn, **Last of the Lilies,** born 2nd March, 1911; s Fleur de Lys (9583), d Lydia Languish, s d Gay Boy (7510).

III. (£2.)—Lady Wernher, Luton Hoo, Luton, whole, **Cutnow's Fairy,** born 25th February, 1911; s China's Fairy Boy (9869), d Cutnow 3rd (Vol. xxi., p. 144), s d Amine's Lad (9474).

R.—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Goddington Plaisanterie 3rd,** born 28th May, 1911; s Goddington Winks (10253), d Goddington Plaisanterie (Vol. xxii., p. 314), s d Blue Sultan (8806).

V.H.C.—Lord Poltimore, Poltimore Park, Exeter, whole, **Manor's Wonder,** born 17th March, 1913, bred by G. F. Simon, Jersey; s Dairy Maid's Champion (4172), d Wonder Cross (6214).

Class 95.—*Jersey Heifer, calved in* 1912. [19 entries.]

I. (**£10.**)—H. Walker, Beach, Bitton, Glos., broken, **Fairy Queen Fern,** born 22nd March, bred by the Asylum Committee, St. Saviour's, Jersey; s Golden Fern's Noble (4570), d Fairy 3rd, s d Forfarshire.

II. (**£5.**)—Lord Rothschild, Tring Park, Tring, Herts, broken, **Myrtle Blossom,** born 10th May; s Golden Fern's Noble (10626), d Bloomfield Belle 2nd (Vol. xxiv.), s d Halburton's Sultan (10634).

III. (**£2.**)—Capt. W. J. M. Hill, Westwood House, West Bergholt, Essex, whole, **Westwood Flora,** born 11th April; s Crown Prince, d Flora, s d La Fosse Hero.

Special (**£3.**)*—T. M. Dow, Talland, St. Ives, Cornwall, whole colour, **Morar,** born 18th June; s Goddington Hero, d Nighneag, s d Noble Dream.

R. for Special*—W. J. Rowlings, Leedstown, Hayle, whole, **Dewdrop,** born 20th January; s Nimrod (Vol. xxiv.), d Daffodil (Vol. xxii., p. 115), s d Bold Boy (9154).

R.—J. Brutton, 7, Princes Street, Yeovil, Somerset, dark brown, **Yeovil Empress,** born 12th May; s Silver Stick (10445), d Easter Egg (Vol. xix., E.J.H.B.), s d Admiral Togo (3561).

V.H.C.—Capt. W. J. M. Hill, whole, **Westwood Lassie,** born 16th May; s Crown Prince, d Dore 4th, s d Royal Reward.—Mrs. C. M. McIntosh, Havering Park, Romford, whole, **Havering Carnatie 15th,** born 19th June; s Locket's Golden Lad (9969), d Havering Carnatie 11th, s d Jolly Jim (8564).—A. Miller-Hallett, Goddington, Chelsfield, Kent, whole, **Goddington Mentora 2nd,** born 12th June; s Goddington Winks (10253), d Mentora 6th (Vol. xxiii., p. 355), s d Noble of Oaklands (3909).—Lord Poltimore, Poltimore Park, Exeter, whole, **Tarantella,** born 16th April; s Distinction's Noble 2nd (9889), d Trilby (Vol. xxi., p. 99), s d Trojan (9803).—Lord Rothschild, whole, **Plymouth Girl,** born 14th August; s Eagle's Chief, d Nesta's Plymouth (Vol. xxiv.), s d Plymouth Lad (9388).

H.C.—Lord Poltimore, whole, **Fenella,** born 11th March; s Distinction's Noble 2nd (9889), d La Chasse Fawny (Vol. xxi., p. 339).

Class 96.—*Jersey Bull, calved in* 1909 *or* 1910. [6 entries.]

I. (**£10.**)—Lord Rothschild, Tring Park, Tring, Herts, whole, **Fontaine's Star,** born 7th April, 1910, bred by W. J. Labey, Grouville, Jersey; s Fontaine's Chief (10242), d Fontaine's Dove (13156 P.S.H.C.), s d Mabel's Raleigh (9330).

II. (**£5.**)—Capt. W. J. M. Hill, Westwood House, West Bergholt, Essex, whole, **Crown Prince,** born 13th March, 1909, bred by Mrs. McIntosh, Havering Park, Romford, Essex; s Jolly Jim, d Coronation, s d Grey Scot.

III. (**£2.**)—A. Miller-Hallett, Goddington, Chelsfield, Kent, broken, **Goddington Noble 2nd** (10252), born 29th April, 1910; s Goddington Wins (10253), d Goddington Bagatelle (Vol. xx., p. 317), s d Rover of Oaklands (8348).

---

* Given by the Royal Cornwall Agricultural Association, for the best Jersey Cow or Heifer in Classes 91 to 95, the property of a resident in Cornwall.

R.—DAME E. F. SMYTH, Ashton Court, Bristol, broken, **Pearl's Noble** (10733), born 22nd March, 1910, bred by C. Le Sueur, Grouville, Jersey; s Noble of Oaklands (9366), d Pearl 5th (11273), s d Morny Cannon (7598).

V.H.C.—W. M. Cazalet, Fairlawne, Tonbridge, whole, **Highness** (10641), born 3rd December, 1909, bred by F. D. Helleur, St. Lawrence, Jersey; s Rosebay's Prince (10424), d Golden Atalanta, s d Oakland's Sailor (9714).

CLASS 97.—*Jersey Bull, calved in* 1911. [7 entries.]

I. (£10.)—H. WALKER, Beach, Bitton, Glos., broken, **Pallas Noble,** born 14th March, bred by N. du Feu, jun., Jersey; s Noble of Oaklands (3909), d Pallas 2nd, s d Sovereign.

II. (£5.)—DAME E. F. SMYTH, Ashton Court, Bristol, whole, **Luby,** born 11th July, bred by J. Stuckey, Whare Koa, Bedford; s Rochettes Lass Boy (10414), d Lulu (Vol. xxi., p. 124), s d Rubens (10080).

III. (£2.)—MRS. C. M. MCINTOSH, Havering Park, Romford, whole, **Wankphar,** born 20th May, bred by J. P. Romeril, St. Peter's, Jersey; s Gipsy's Noble (10249), d Brownie's Beauty (15691 P.S.C.), s d Broadland's Glory (9162).

R.—J. BRUTTON, 7, Princes Street, Yeovil, Somerset, grey, **Prince Guide,** born 2nd September, bred by — Eustache, St. Martin's, Jersey; s Royal Guide (4104), d Princess Daisy (13447), s d Halloween's Fox (3631).

V.H.C.—LORD POLTIMORE, Poltimore Park, Exeter, broken, **Pipsqueak** (Vol. xxiii., p. 101), born 24th March; s Distinction's Noble 2nd (9889), d Playful (Vol. xxi., p. 395), s d Jester (7551).

H.C.—LORD POLTIMORE, whole, **Jersey Nobleman,** born 1st May, bred by J. de La Haye, jun., St. Ouen's, Jersey; s Noble Monarch (4519), d Cuckoo Lass 2nd (15696), s d Derry Golden Lad (3472).

C.—EARL TEMPLE, Newton Park, Bristol, whole, **Monster Chief,** born 24th October, bred by W. Syvret, St. Ouen's, Jersey; s Noble du Coin (4556 J.H.B.), d Louise Bonne 5th, s d Monster (3762 J.H.B.).

CLASS 98.—*Jersey Bull, calved in* 1912. [13 entries.]

I. (£10.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Caster's Premier,** born 25th March, bred by P. J. Bree, Grouville, Jersey; s Combination's Premier, d Lass of La Source 2nd (15466 P.S.H.C.), s d Golden Castor (9249).

II. (£5.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Goddington Noble 11th,** born 18th April; s Goddington Winks (10253), d Goddington Bagatelle (Vol. xx., p. 317), s d Rover of Oaklands (8348).

III. (£2.)—MISS ENDERBY, Beckington House, Beckington, Bath, brown, **Beckington Champion,** born 20th March; s Century's Champion, d Mourier Belle 14th.

R.—H. WALKER, Beach, Bitton, Glos., self, **Beach Premier,** born 20th April; s Combination Premier (4669), d Sweetbread 25th, s d Expectation Prince.

Special (£5.)*—MISS E. PILCHER, Talland, St. Ives, Cornwall, broken, **Vanilla's Noble 3rd,** born 8th September, bred by A. Miller-Hallett, Goddington, Chelsfield, Kent; s Golden Chance's Noble (10256), d Vanilla 2nd, s d Hobby (7865).

V.H.C.—CAPTAIN W. J. M. HILL, Westwood House, West Bergholt, Essex, whole, **Fern's Pilot,** born 12th February bred by J. W. Blampied, St. John, Jersey; s Golden Fern Noble, d Pilot's Sultan's Gipsy, s d Noble of Oaklands.

H.C.—LORD POLTIMORE, Poltimore Park, Exeter, whole, **King Astor,** born 1st May, bred by E. E. Leonard, St. Ouen's, Jersey; s Noble Boy (3611), d Queen Astor (9541), s d Astor (3042).

C.—MRS. C. M. MCINTOSH, Havering Park, Romford, broken, **Foxwhelp,** born 21st April, bred by J. H. Smith Barry, Pewsey, Wilts; s May Fox, d Lady May, s d Slip.

GUERNSEY.

(£20 towards the Prizes in the Guernsey Classes was given by the English Guernsey Cattle Society.

CLASS 99.—*Guernsey Cow, in-Milk, calved before* 1910. [12 entries.]

I. (£10) and Special (£3)†—CANON S. R. RAFFLES-FLINT, Nansawsan, Ladock, Cornwall, red and white, **Ladock Princess,** born 9th January, 1907; s Trewince True Boy (1728), d Ladock Lily (6940), s d Hasley of Chitral (1182 P.S. R.G.A.S.).

II. (£5.)—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, red and white, **Wena,** born 2nd March, 1900, bred by R. Herival, Alderney; s Liberty, d Daisy.

III. (£2) and First Special (£5)‡—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts, fawn with white patches, **Winter Green 5th** (7515 E.G.H.B.), born 3rd January, 1907, bred by the late Right Hon. J. E. Ellis, Wrea Head, Scalby, Yorkshire; s Hayes King (1673 E.G.H.B.), d Winter Green 3rd, s d Broom Flower (1247 P.S., R.G.A.S.), (1446 E.G.H.B.).

R. & V.H.C.—COL. E. ST. AUBYN, Glynn, Bodmin, fawn and white, **Golden Horn of Glynn 2nd,** born 5th April, 1908; s Clatford Espior (1813), d Golden Horn of Glynn (5816), s d Prince Charlie (819).

H.C.—CANON S. R. RAFFLES-FLINT, fawn and white, **Ladock Beauty** (81361), born 22nd January, 1909; s Grage Boy 3rd (1906), d Ladock Lass (6939), s d Squire of the Sages (1318 P.S., R.G.A.S.).—W. PENROSE, Trequean, Breage, Helston, light red, **Fanny du Foulon 20th,** born 8th January, 1907, bred by

---

* Given by the Royal Cornwall Agricultural Association, for the best Jersey Bull in Classes 96 to 98, the property of a resident in Cornwall.

† Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 99 to 102, the property of a resident in Cornwall.

‡ Given by the English Guernsey Cattle Association for the Cow or Heifer in the Guernsey Classes, entered in the English Guernsey Cattle Society's Herd Book, or eligible and tendered for entry therein, obtaining the greatest number of points by the practical test of the churn, the points to be reckoned on the weight of Butter, and an allowance for lactation to be made under the scale settled by the English Guernsey Cattle Society.

J. Le Page, Hill Farm, St. Andrews, Guernsey; s Desdemona's Masher (1694), d Fanny du Foulon 8th (4276).—VISCOUNT VALLETORT, Cotehele House, Cornwall, red and white, **Cotehele Saucy,** born 1st December, 1904, bred by the Earl of Mount Edgcumbe, Cotehele, St. Dominic; s King of the Mill (1581), d Cotehele Sea Belle.

CLASS 100.—*Guernsey Heifer, in-Milk, calved in* 1910. [3 entries.]

I. (**£10**) and **R. & V.H.C.** for Special* and Second Special (**£3**)†—COL. E. ST. AUBYN, Glynn, Bodmin, fawn and white, **Golden Horn of Glynn 4th,** born 5th May; s Braye Boy 3rd (1906), d Golden Horn of Glynn (5816), s d Prince Charlie (819).

II. (**£5.**)—GEORGE BLIGHT, Tregonning, Breage, Helston, Cornwall, fawn and white, **Governs Daisy** (8527), born 28th September, bred by W. Simmons, Governs, Kenwyn, Truro, Cornwall; s Ladock Dairyman (2049), d Brunett's Polly 3rd (7176), s d Tregonning King (1792).

CLASS 101.—*Guernsey Heifer, calved in* 1911. [15 entries.]

I. (**£10.**)—G. OAKEY, Row Gardens, Wood, Charlwood, fawn and white, **Sweet Briar** (8861), born 22nd July; s Admiral of the Brigets (2116), d Brittleware Maud (6791).

II. (**£5.**)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, orange and white, **Elfordleigh Beautiful** (8932), born 17th April; s Raymond of the Preel 4th, late Mike (1911, P.S., R.G.A.S.), d Beauty of King's Mills Lodge (8831).

III. (**£2.**)—CANON S. R. RAFFLES-FLINT, Nansawsan, Ladock, Cornwall, fawn and white, **Ladock Sweet Briar,** born 29th April; s Cotehele Duke (2009), d Ladock Beauty (8136), s d Braye Boy 3rd (1906).

R. & V.H.C.—T. B. BOLITHO, Trewidden, Penzance, Cornwall, fawn and white, **Trewidden Golden Cherry** (9237), born 28th July, bred by N. T. Martin, Trewince, Grampound Road, Cornwall; s Cotehele Duke (2009), d Trewince Golden (8775).

H.C.—G. H. JOHNSTONE, Trewithen, Grampound Road, fawn and white, **Donnington Juno 2nd** (8923), born 26th August, bred by A. C. Harris, Donnington Manor, Chichester; s Donnington Jack (2128), d Donnington Juno (8041), s d Lord Howe of Warren Wood (1962).—W. PENROSE, Trequean, Breage, Helston, fawn and white, **Trequean Pet,** born 8th November; s Godolphin Arthur (664), d Trequean Lady (8290), s d Hunguets Royal (1944).—TUNSTALL-BEHRENS, BROS., Porth-en-Alls, Marazion, fawn and white shield forehead, **Rose 2nd of Neuve Maison** (10653), born April 17th, bred by J. D. Le Messurier, St. Peter's, Guernsey; s The Conqueror 3rd (2032), d Rose Neuve Maison (4228).

---

* Given by the Royal Cornwall Agricultural Association for the best Cow or Heifer in Classes 99 to 102, the property of a resident in Cornwall.

† Given by the English Guernsey Cattle Association for the Cow or Heifer in the Guernsey Classes, entered in the English Guernsey Cattle Society's Herd Book, or eligible and tendered for entry therein, obtaining the greatest number of points by the practical test of the churn, the points to be reckoned on the weight of Butter, and an allowance for lactation to be made under the scale settled by the English Guernsey Cattle Society.

C.—T. B. BOLITHO, fawn and white, **Trewidden July Rose** (9238), born 20th April, bred by G. Blight, Tregonning, Breage, Cornwall; s Trewince New Boy (2396), d July Rose 6th (7323).—T. R. BOLITHO, Trengwainton, Penzance, orange, white markings, **Trengwainton Verbena** (9233), born 4th March; s Golden Hero of the Vauxbelets (1929), d Trengwainton Sweetbriar (8285), s d Trewince King (1355).—J. B. FORTESCUE, Boconnoc, Lostwithiel, Cornwall, fawn and white, **Royal Beauty 2nd,** born 16th November; s Trengwainton Village Lad (1991), d Manor View Beauty (6978).

CLASS 102.—*Guernsey Heifer, calved in* 1912. [20 entries.]

I. (£10.)—VISCOUNT FALMOUTH, Tregothnan, Truro, fawn and white, **Tregothnan Fairy Rose,** born 31st May; s Nelson of the Blicqs (2343), d Tregothnan Fairyland (7482), s d Sir James (1784).

II. (£5.)—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn and white, **Hayes Bob 3rd,** born 11th May; s Charmante 4th of the Gron, d Bob 31st.

III. (£2.)—SIR E. A. HAMBRO, fawn and white, **Hayes Rose 2nd,** born 31st July; s Charmant 4th of the Gron, d Rose des Houards (52).

R. & V.H.C.—HON. J. BOSCAWEN, Tregye, Perranwell, Cornwall, **Tregye Fantail,** born 19th February; s Jupiter (2046), d Fanny of Lelant 9th (5803), s d Disappointment (1368).

H.C.—T. B. BOLITHO, Trewidden, Penzance, Cornwall, fawn and white, **Trewidden Sun Flower,** born 24th February; s Governor of the Blicqs (2292), d Trewidden Preel 4th (8772).—T. R. BOLITHO, Trengwainton, Penzance, orange, white markings, **Trengwainton Golden Daffodil,** born 4th May; s Trengwainton Golden Knight (7270), d Trengwainton Daffodil (8764), s d Tulip (7493).—W. PENROSE, Trequean Breage, Helston, fawn and white, **Trequean Ruby,** born 11th January; s Godolphin Arthur (1664), d Queen of Honour 6th (7432), s d Loyal of the Tertre 2nd (1784).

C.—T. R. BOLITHO, orange, white markings, **Trengwainton Bright Eyes,** born 7th March; s Good Friday (2142), d Wild Eyes (7931), s d Trengwainton Fancy (6379).—HON. J. BOSCAWEN, fawn and white, **Tregye Fiction,** born 8th February; s Jupiter (2046), d Fancy (7634), s d Eryngium.

CLASS 103.—*Guernsey Bull, calved in* 1909 *or* 1910. [7 entries.]

I. (£10.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, orange and white, **Raymond's Joe** (2362), born 30th April, 1910, bred by J. Le Page, Neuve Maison, Castel, Guernsey; s Raymond of the Preel 4th (1911 P.S., R.G.A.S.), d Bon Espoir 9th (4545 P.S., R.G.A.S.).

II. (£5.)—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts, red with little white, **Merton Signet 5th** (2172 E.G.H.B.), born 27th July, 1909, bred by W. J. Empson, Merton Grange, Gamlingay, Cambridgeshire; s Merton Signet (1691 E.G.H.B.), d Clatford Lady Mead 2nd (6813 E.G.H.B.).

III. (**£2**) and **R.** for Special*—P. Q. Christopher, Engew, Gwilhian, Hayle, lemon, **Trewince New Boy** (2396), born 16th January, bred by N. T. Marten, Trewince, Grampound Road; s Trewince True Boy (1728), d Trewince Gem (6030).

R. & V.H.C.—P. Q. Treloar, Godolphin Manor, Breage, Helston, fawn, **Godolphin Prince,** born 18th May, 1910, bred by E. H. Sauvarin, Village, St. Andrew's, Guernsey.

Class 104.—*Guernsey Bull, calved in* 1911. [11 entries.]

I. (**£10.**)—Sir E. A. Hambro, Hayes Place, Hayes, Kent, fawn and white, **Flora's Raymond,** born 7th April, bred by F. Le Panmentier, Effords, Castel; s Raymond of the Preel 4th, d Flora the 3rd of the Effards.

II. (**£5.**)—Sir E. A. Hambro, dark fawn and white, **Langley Gay Boy,** born 2nd April, bred by J. L. Buchnall, Langley Court, Beckenham, Kent; s Merton Sir William, d Itchen Lady May.

III. (**£2**) and Special (**£5**)*—Viscount Valletort, Cotehele House, Cornwall, red and white, **Cotehele Lad,** born 30th January, bred by the Earl of Mount Edgcumbe, Cotehele House, Cornwall; s Fleurie's Lad (2265), d Cotehele Cherry (6823,) s d King of the Mill (1581).

R. & V.H.C.—J. Williams, Scorrier House, Scorrier, Cornwall, fawn and white, **The Clown,** born 21st May, bred by J. B. Fortescue, Lostwithiel, Cornwall; s Trengwainton Village Lad (1991), d Ballet Girl (6411).

H.C.—E. Hosking, Great Rosevidney, Ludgvan, orange and white, **Rosevidney Dairy King,** born 12th June, bred by T. R. Bolitho, Trengwainton, Radron; s Good Friday (2142), d Godolphin Ida 2nd (7290).

C.—T. B. Bolitho, Trewidden, Penzance, Cornwall, fawn and white, **Golden Hero of the Chene** (3035 R.G.A.S.), born 24th July, bred by F. W. Jehan, Le Chene Farm, Guernsey; s Cocot 3rd (2327 R.G.A.S.), d Choir Girl 2nd (8606 R.G.A.S.).

Class 105.—*Guernsey Bull, calved in* 1912. [14 entries.]

I. (**£10.**)—G. Oakey, Row Gardens, Wood, Charlwood, fawn and white **Toby,** born 18th June; s Admiral of the Briquets (2116), d Brittleware Marigold (7553).

II. (**£5.**)—Hon. J. Boscawen, Tregye, Perranwell, Cornwall, fawn and white, **Tregye Troy,** born 6th February; s Jupiter (2046), d Helen (7678), s d Eryngium (2016).

III. (**£2.**)—Col. E. St. Aubyn, Glynn, Bodmin, fawn and white, **Golden Reveller** (H.B. 1913), born 18th April, 1913; s Reveller (2363), d Golden Horn of Glynn (5816), s d Prince Charlie.

R. & V.H.C.—W. Penrose, Trequean, Breage, Helston, fawn and white, **Trequean Peet,** born 22nd February; s Godolphin Arthur (1664), d Fanny du Foulon 19th (7255), s d Desdemona's Masher (1694).

---

* Given by the Royal Cornwall Agricultural Association for the best Bull in Classes 103 to 105, the property of a resident in Cornwall.

H.C.—G. Blight, Tregonning, Breage, Helston, Cornwall, bred by J. B. Fortescue, Boconnoc, Lostwithiel.—J. Wills, Trebarvah, Constantine, Penryn, lemon and white, **Ladock Dairy Lad,** born 13th April, bred by Rev. Canon Raffles-Flint, Ladock, Grampound Road; s Ladock Dairy King (2322), d Ladock Beauty (8136), s d Braye Boy 3rd (1906).

C.—T. R. Bolitho, Trengwainton, Penzance, orange, white marking, **Trengwainton Golden Spur,** born 28th April; s Trengwainton Golden Knight (7270), d Godolphin Queen (7655), s d Queen of the Blicqs (7059).—J. Williams Scorrier House, Scorrier, Cornwall, red and white, **Torrock,** born July, bred by W. T. Richards, Godolphin, Breaze, Cornwall; s Godolphin Premier (2276), d Godolphin Nina (7274).

KERRY.

Class 106.—*Kerry Cow or Heifer, in-Milk, calved in or before* 1910. [2 entries.]

I. (£10.)—L. Currie, Minley Manor, Farnborough, Hants, **Due Rosebud,** born 10th December, 1906, bred by J. Mill, The Park, Killarney; s Duv Daniel (590), d Duv Divine (3231 F.S.).

II. (Silver Medal) and **R.** for Special*—L. Currie, **Minley Madam** (1235 F.S.), born 1908.

Class 107.—*Kerry Heifer calved in* 1911 *or* 1912.—*First prize,* £10 —*second,* £5—*third,* £2.

[No Entry.]

Class 108.—*Kerry Bull, calved in* 1910, 1911, *or* 1912. [2 entries.]

I. (£10) and Special*—L. Currie, Minley Manor, Farnborough, Hants, **Minley Master,** born 27th October, 1911; s Ard Calin Picture (241), d Minley Maud (1244 F.S.).

II. (Silver Medal.)—W. Vicary, The Knoll, Newton Abbot, **La Mancha Old Nick,** born 10th October, 1910, bred by R. T. Robertson, The Hatch, Malahide, Co. Dublin; s La Mancha Tip and Run, d La Mancha Mascot.

DEXTER.

Class 109.—*Dexter Cow or Heifer, in-Milk, calved in or before* 1910. [8 entries.]

I. (£10.)—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, red, **La Mancha Hard to Find** (1238), born 9th April, 1904, bred by R. T. Robertson, Malahide, Dublin; s La Mancha What Next (279), d La Mancha Dolly Day Dream (1185).

---

* Given by B. de Bertodano, Esq., for the best Animal in Classes 106 to 108, to which the Cup had not previously been awarded. The Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

The English Kerry and Dexter Cattle Society will present a Silver Medal to the owner of the winning animal on each occasion the Cup is competed for.

II. (£5.)—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Enid** (H.B. 1751), born 1908.

III. (£2.)—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Buttercup 2nd,** born 4th June, 1909; s Barrow Count (383), d Barrow Buttercup (1676 F.S.).

R. & V.H.C.—B. de Bertodano, black, **Cowbridge Dainty Maid** (H.B. 1643), born 12th March, 1908; s Cowbridge Xit (291 H.B.), d Cowbridge Dainty Dish (1261 H.B.).

H.C.—H. M. Gibbs, black, **Barrow Duchess 3rd,** born 1st June, 1907; s Brockhampton Count (255), d Barrow Duchess 2nd (1297), s d Compton Dan (213).—Hon. Mrs. C. Portman, red, **Goldicote Pearl** (1890), born 2nd May, 1910; s Jupiter (435), d La Mancha Hard to Find (1238), s d La Mancha What Next (279).

C.—W. Vicary, The Knoll, Newton Abbot, black, **Gort Sunbeam 3rd** (H.B. 2298), born 2nd September, 1906, bred by D. M. Rattery, Gortnarkey, Ballybonion, Ireland; s Gort Paddy (509), d Gort Love (2146).

Class 110.—*Dexter Heifer, calved in* 1911 *or* 1912. [5 entries.]

I. (£10) and Special*—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Emerald 3rd,** born 13th May, 1911; s Barrow Bacchus (419), d Barrow Emerald 2nd (1831), s d Captain.

II. (£5) and **R.** for Special*—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, black, **Goldicote Minim,** born 25th June, 1911; s La Mancha Wee Topper (439), d Wyndthorpe Minima (1549), s d Don Gentian (244).

III. (Bronze Medal.)—H. M. Gibbs, black, **Barrow Buttercup 4th,** born 4th June, 1911; s Barrow Bacchus (419), d Barrow Buttercup 2nd (1728), s d Barrow Count (383).

R. & V.H.C.—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Flirt 2nd** (H.B. 1869), born 6th May, 1911; s Cowbridge Sir Dandy (H.B. 428), d Cowbridge Flirt (1752), s d Cowbridge General (385).

C.—Mrs. E. Morant, Brokenhurst Park, Hants, black, **Brokenhurst Flora,** born 29th July, 1911, bred by Mrs. Withington, Danebury, Stockbridge; s Cloister (463), d Miss Mowbray (1983).

Class 111.—*Dexter Bull, calved in* 1910, 1911 *or* 1912. [6 entries.]

I. (£10.)—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Ivor** (H.B. 466), born 1st August, 1910; s Cowbridge General (385 H.B.), d Cowbridge Ena (1383 H.B.), s d Little Ivor (336 H.B.).

---

* Given by the English Kerry and Dexter Cattle Society, the Devonshire Challenge Cup, for the best Animal in Classes 109 to 112, bred by Exhibitor, and entered in or eligible for the English Kerry and Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

The English Kerry and Dexter Cattle Society will present a Silver Medal to the owner of the winning animal on each occasion the Cup is competed for.

II. (£5.)—B. de Bertodano, black, **Cowbridge Chieftain** (Vol. xiii.), born March, 1911.

III. (£2.)—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Orphan,** born 29th May, 1911 ; d Barrow Daisy.

R. & H.C.—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, black, **Loyal Irishman,** born 14th April, 1912 ; s Shamrock (493), d La Mancha Hard to Find (1238), s d La Mancha What Next (279).

C.—Mrs. E. Morant, Brokenhurst Park, Hants, black, **Brien Boru** (460), born 18th November, 1911, bred by G. Habgood, Harley Lodge, Wimborne; s Harley Conqueror (434), d Harley Crocus (1654), s d Kingwood Comely Boy (264).

The Prizes in Class 112 were given by the English Kerry and Dexter Cattle Society.

CLASS 112.—*Dexter Bull, calved in* 1912, *whose sire and dam were entered in the English Kerry and Dexter or Royal Dublin Society's Herd Book.* [3 entries.]

I. (£10.)—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, red, **Goldicote Mars,** born 8th May; s Shamrock (493), d Minerva (1634), s d Impudence (322).

II. (£3.)—Hon. Mrs. C. Portman, black, **Loyal Irishman,** born 14th April, 1912; s Shamrock (493), d La Mancha Hard to Find (1238), s d La Mancha What Next (279).

DAIRY.

CLASS 113.—*Cow, in-Milk, of any breed or cross, under* 900 *lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking* 12 *per cent. of total solids, of which not less than* 3 *per cent. shall be fat, the period of lactation being taken into consideration.* [3 entries.]

I. (£10.)—J. H. Smith-Barry, Stowell Park, Pewsey, Wilts, Jersey, **New Year's Gift,** born 1st January, 1907; s Oxford Sunbeam (8650), d Leyland's Gift, s d Lord Charles Beresford (5961). (Last calf, 15th January, 1913).

II. (£5.)—J. Brutton, 7, Princes Street, Yeovil, Somerset, light brown Jersey, **Irish Lass,** born 12th August, 1904, bred by Mrs. Spencer, Oakhill, Bath; s Emerald (7797), d Arcadia 2nd (Vol. xv., p. 228, E.J.H.B.), s d Duke of Orleans (5868). (Last calf, March 18, 1913.)

III. (£2.)—J. H. Smith-Barry, whole fawn Jersey, **Marionette,** born 3rd October, 1904; s Gay Boy (7510), d Marigold, s d Sportive (7037). (Last calf, February 15, 1913.)

CLASS 114.—*Cow, in-Milk, of any breed or cross,* 900 *lbs. live weight or over, yielding the largest quantity of milk of normal character, containing at each time of milking* 12 *per cent. of total solids, of*

which not less than 3 *per cent. shall be fat, the period of lactation being taken into consideration.* [11 entries.]

I. (£10.)—Mrs. R. C. Bainbridge, Elfordleigh, Plympton, South Devon, lemon fawn, Guernsey, **Cherry**, age about 9 years, bred by — Laity, Cornwall; s Rosy Boy. (Last calf, March 14, 1913.)

II. (£5.)—J. Evens, Burton, Lincoln, red Lincoln Red Shorthorn, **Burton Bella**, 4 years old. (Last calf, December 9, 1912.)

III. (£2.)—Lord Rothschild, Tring Park, Tring, Herts, broken Jersey, **Triangle 2nd**, born 13th December, 1905, bred by J. Marette, Jersey; s Mourier King (9705), d Triangle (9579 P.S.C.), s d Advancer (6758). (Last calf, January 22, 1913.)

C.—Lady Wernher, Luton Hoo, Luton, whole Jersey, **Carlsbad** (Vol. xxii., p. 267), born 4th December, 1907; s King Henry (8571), d Cutnow (Vol. xvi., p. 264), s d Bismarck's Boy (6786). (Last calf, February 10, 1913.)—Canon S. R. Raffles-Flint, Nansawsan, Ladock, Cornwall, red and white Guernsey, **Ladock Princess**, born 9th January, 1907; s Trewince True Boy (1728), d Ladock Lily (6940), s d Hasley of Chitral (1182 P.S., R.G.A.S.). (Last calf, May 4, 1912.)—A. W. Bailey Hawkins, Stagenhoe Park, Welwyn, Herts, fawn with white patches Guernsey, **Winter Green 5th** (7515 E.G.H.B.), born 3rd January, 1907, bred by the late Right Hon. J. E. Ellis, Wrea Head, Scalby, Yorkshire; s Hayes King (1673 E.G.H.B.), d Winter Green 3rd, s d Broom Flower (1247 P.S., R.G.A.S. 1446 E.G.H.B.). (Last calf, November 27, 1912.)—J. H. Smith-Barry, Stowell Park, Pewsey, Wilts, whole fawn Jersey, **Caprice**, born 28th July, 1905; s Oxford Sunbeam (8650), d Captious, s d Geonnais Lad (6562). (Last calf, February 1, 1913.)

BUTTER TEST.

(The Prizes in Class 115 were given by the English Jersey Cattle Society, and entries in them were subject to any conditions issued by that Society previous to the tests.)

Class 115.—*Cow, eligible for or entered in the English Jersey Herd Book, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society.* [9 entries.]

Certificates of Merit were also awarded to Cows under 5 *years old obtaining* 30 *points, and to Cows* 5 *years old or over obtaining* 35 *points.*

I. (Gold Medal or £10.)—Lord Rothschild, Tring Park, Tring, Herts, broken Jersey, **Triangle 2nd**, born 13th December, 1905, bred by J. Marette, Jersey; s Mourier King (9705), d Triangle (9579 P.S.C.), s d Advancer (6758). (Last calf, January 22, 1913).

II. (Silver Medal.)—J. H. Smith-Barry, Stowell Park, Pewsey, whole fawn Jersey, **Marionette**, born 3rd October, 1904; s Gay Boy (7510), d Marigold, s d Sportive (7037). (Last calf, February 15, 1913.)

III. (Bronze Medal.)—J. Brutton, 7, Princes Street, Yeovil, Somerset, light brown Jersey, **Irish Lass,** born 12th August, 1904, bred by Mrs. Spencer, Oakhill, Bath; s Emerald (7797), d Arcadia 2nd (Vol. xv., p. 228), E.J.H.B.,) s d Duke of Orleans (5868).

Certificate of Merit.—Lady Wernher, Luton Hoo, Luton, whole Jersey, **Carlsbad** (Vol. xxii., p. 267), born 4th December, 1907; s King Henry (8571), d Cutnow (Vol. xvi., p. 264), s d Bismarck's Boy (6786). (Last calf, February 10, 1913).—J. H. Smith-Barry, Jersey, **New Year's Gift,** born 1st January, 1907; s Oxford Sunbeam (8650), d Leyland's Gift, s d Lord Charles Beresford (5961). (Last calf, January 15, 1913).

CHAMPION PRIZES.

Given by H.R.H. the Prince of Wales, K.G.

Best Bull exhibited in any of the Classes.

Silver Cup, value £15.—G. Butters, Hill House, Newton, Leominster, **Sailor King** (28687), born 31st January, 1910; s Sailor Prince (26465), d Lassie (Vol. xxxvi., p. 198), s d Scot (23134).

R.—Sir G. Cooper, Bart., Hursley Park, Winchester, Hants, **Bandolier of Hursley** (30133), born 10th January, 1910; s Black for Ever of Ballindallock (25338), d Blue Bell of Hursley (41818), s d Evolsurus (21908(.

Best Cow or Heifer exhibited in any of the Classes.

Silver Cup, value £15.—L. H. Alford, Horridge, Ashford, North Devon, **Horridge Belle,** born 25th February; s Hall Curly Boy (6732), d Suffragette (22480), s d Capton Sunny Jim (5192).

R.—W. J. Hosken, Pulsack, Hayle, Cornwall, roan, **Cornish Maid 3rd,** born 18th February; s Good Boy (102394), d Cornish Maid 2nd, s d Barteliver General (89003).

SHEEP.

DEVON LONGWOOLLED.

(£10 towards the prizes in Classes 116 to 118 was contributed by the Devon Longwoolled Sheep Breeders' Society.)

Class 116.—*Devon Longwoolled Shearling Ram.* [6 entries.]

I. (£10.)—R. Cook, Crazelowman.

II. (£5.)—F. White, Torweston, Williton.

III. (£2.)—W. Brent, Clampit, Callington, Cornwall.

R.—F. White.

H.C.—R. Cook.—F. White.

Class 117.—*Pair of Devon Longwoolled Ram Lambs, dropped in* 1913.—[4 entries.]

I. (£10.)—F. WHITE, Torweston, Williton.

II. (£5.)—R. COOK, Crazelowman.

III. (Bronze Medal.)—F. WHITE.

R. and Special* **(£4.)**—W. BRENT, Clampit, Callington, Cornwall.

Class 118.—*Pen of three Devon Longwoolled Shearling Ewes.* [3 entries.]

I. (£10.)—F. WHITE, Torweston, Williton.

II. (£5.)—R. COOK, Crazelowman.

III. (Bronze Medal.)—R. COOK.

SOUTH DEVON.

(The Prizes in Classes 119 and 123 were given by the South Devon Flock Book Association.)

Class 119.—*South Devon Ram, two shear and upwards* [5 entries].

I. (£5.)—J. S. HALLETT, Sherford, Brixton, Plymouth, bred by J. Cornish, Kingsbridge.

II. (£3.)—E. H. HOSKIN, Cartuther Barton, Liskeard.

III. (Bronze Medal.)—R. B. TRANT, Tregrill, Menheniot, bred by Messrs. Whitley Bros., Primley, Paignton.

R.—W. F. SOBEY, Trenant, Liskeard.

H.C.—W. LANYON, Treludderon, Newlyn East, Grampound Road, bred by E. H. Hoskin, Cartuther, Liskeard.

Class 120.—*South Devon Shearling Ram.* [10 entries.]

I. (£10.)—J. STOOKE, Sherford, Brixton, Plymouth.

II. (£5.)—W. F. SOBEY, Trenant, Liskeard.

III. (£2.)—P. G. BROWN, Tremadart, Duloe, Cornwall.

R.—J. S. HALLETT, Sherford, Brixton, Plymouth.

V.H.C.—W. F. SOBEY.

H.C.—R. B. TRANT, Tregrill, Menheniot.

Class 121.—*Pair of South Devon Ram Lambs, dropped in* 1913. [8 entries.]

I. (£10.)—J. S. HALLETT, Sherford, Brixton, Plymouth.

II. (£5.)—R. B. TRANT, Tregrill, Menheniot.

---

* Given by the Royal Cornwall Agricultural Association for the best Ram or Ram Lamb in Class 116, 117, 119, 120, 121, 135 or 136, the property of a resident in Cornwall.

III. (**£2.**)—P. G. Brown, Tremadart, Duloe, Cornwall.
R.—J. Stooke, Sherford, Brixton, Plymouth.
H.C.—J. A. Spry & Son, Tregamenna, Ruan High Lane, Grampound Road.

Class 122.—*Pen of three South Devon Shearling Ewes.* [4 entries.]

I. (**£10.**)—J. Stooke, Sherford, Brixton, Plymouth.
II. (**£5**) and Special (**£3.**)*—P. G. Brown, Tremadart, Duloe, Cornwall.
III. (**Bronze Medal.**)—P. G. Brown.

Class 123.—*Fen of three South Devon Ewe Lambs, dropped in* 1913. [6 entries.]

I. (**£5.**)—J. S. Hallett, Sherford, Brixton, Plymouth.
II. (**£3.**)—R. B. Trant, Tregrill, Menheniot.
III. (**£2**) and **R.** for Special*—P. G. Brown, Tremadart, Duloe, Cornwall.
R.—J. A. Spry & Son, Tregammena, Ruan High Lanes, Grampound Road.
H.C.—W. Lanyon, Treludderon, Newlyn East, Grampound Road.
C.—Wm. Hawke & Sons, Besoughan, Colan, St. Columb.

KENT OR ROMNEY MARSH.

(The Prizes in Class 124 were given by the Kent or Romney Marsh Sheep Breeders Association.)

Class 124.—*Kent or Romney Marsh Two Shear Ram.* [7 entries.]

I. (**£10.**)—J. E. Quested, The Firs, Cheriton, Kent.
II. (**£5.**)—W. M. Cazalet Fairlawne, Tonbridge.
III. (**£2.**)—J. E. Quested.
R.—L. H. and G. W. Finn, Westwood Court, Faversham.
V.H.C.—F. Neame, Macknade, Faversham.
H.C.—C. E. Gunther, Tongswood, Hawkhurst.

Class 125.—*Kent or Romney Marsh Shearling Ram.* [11 entries.]

I. (**£10.**)—J. E. Quested, The Firs, Cheriton, Kent.
II. (**£5.**)—L. H. and G. W. Finn, Westwood Court, Faversham.
III. (**£2.**)—J. E. Quested.
R.—C. E. Gunther, Tongswood, Hawkhurst.
V.H.C.—F. Neame, Macknade, Faversham.
H.C.—W. M. Cazalet, Fairlawne, Tonbridge.

* Given by the Royal Cornwall Agricultural Association for the best Pen of Ewes or Ewe Lambs in Class 116, 122, 123, 137 or 138, the property of a resident in Cornwall.

CLASS 126.—*Pen of three Kent or Romney Marsh Shearling Ewes.* [6 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.
II. (**£5.**)—J. E. QUESTED.
III. (**£2.**)—C. E. GUNTHER, Tongswood, Hawkhurst.
R.—F. NEAME, Macknade, Faversham.
V.H.C.—W. M. CAZALET, Fairlawne, Tonbridge.
C.—C. E. GUNTHER.

SOUTHDOWN.

(The Prizes in Class 127 were given by the Southdown Sheep Society).

CLASS 127.—*Southdown Two Shear Ram.* [8 entries.]

I. (**£10**) and Special*—LADY WERNHER, Luton Hoo, Luton.
II. (**£5.**)—D. MCCALMONT, Crockfords, Newmarket.
III. (**£2.**)—SIR J. COLMAN, BART., Gatton Park, Surrey.
R.—SIR J. COLMAN, BART.
H.C.—LADY WERNHER.
C.—C. R. W. ADEANE, Babraham Hall, Cambs.

CLASS 128.—*Southdown Shearling Ram.* [12 entries.]

I. (**£10**) and **R.** for Special*—SIR J. COLMAN, BART., Gatton Park, Surrey.
II. (**£5.**)—W. M. CAZALET, Fairlawne, Tonbridge.
III. (**£2.**)—D. MCCALMONT, Crockfords, Newmarket.
R.—J. R. WEST, Alscot Park, Stratford-on-Avon.
V.H.C.—LADY WERNHER, Luton Hoo, Luton.
H.C.—LADY WERNHER.
C.—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

CLASS 129.—*Pair of Southdown Ram Lambs, dropped in* 1913. [7 entries.]

I. (**£10.**)—SIR J. COLMAN, BART., Gatton Park, Surrey.
II. (**£5.**)—D. MCCALMONT, Crockfords, Newmarket.
III. (**£2.**)—J. R. WEST, Alscot Park, Stratford-on-Avon.
R.—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
H.C.—LADY WERNHER, Luton Hoo, Luton.

---

* Given by the Southdown Sheep Society under Condition 69, a Silver Medal or £1 for the best Ram or Ram Lamb in Classes 127 to 129.

CLASS 130.—*Pen of three Southdown Shearling Ewes.* [5 entries.]

I. (£10.)—SIR J. COLMAN, BART., Gatton Park, Surrey.

II. (£5.)—W. M. CAZALET, Fairlawne, Tonbridge.

III. (Bronze Medal.)—LADY WERNHER, Luton Hoo, Luton.

R.—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

C.—R. S. HICKS, Wilbraham Temple, Cambs.; bred by J. B. Tribe, The Grange, Earnby, near Chichester.

HAMPSHIRE DOWN.

CLASS 131.—*Hampshire Down Shearling Ram.* [4 entries.]

I. (£10.)—J. E. BAIGENT, Westend, Froyle, Alton, Hants.

II. (£5.)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.

III. (Bronze Medal.)—CAPT, J. A. MORRISON.

CLASS 132.—*Pair of Hampshire Down Ram Lambs, dropped in* 1913. [4 entries.]

I. (£10.)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.

II. (£5.)—J. E. BAIGENT, Westend, Froyle, Alton, Hants.

III. (Bronze Medal.)—E. A. EDNEY, Five Heads Farm, Horndean.

CLASS 133.—*Pen of three Hampshire Down Shearling Ewes.* [4 entries.]

I. (£10.)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.

II. (£5.)—J. E. BAIGENT, Westend, Froyle, Alton, Hants.

III. (Bronze Medal.)—E. A. EDNEY, Five Heads Farm, Horndean.

R.—J. E. BAIGENT.

(The Prizes in Class 134 were given by the Hampshire Down Sheep Breeders' Association.)

CLASS 134.—*Pen of three Hampshire Down Ewe Lambs, dropped in* 1913. [3 entries.]

I. (£7.)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.

II. (£3.)—E. A. EDNEY, Five Heads Farm, Horndean.

R.—J. E. BAIGENT, West end, Froyle, Alton, Hants.

OXFORD DOWN.

CLASS 135.—*Oxford Down Shearling Ram.* [12 entries.]

I. (**£10.**)—J. HORLICK, Cowley Manor, near Cheltenham.

II. (**£5.**)—J. HORLICK.

III. (**£2.**)—J. T. HOBBS, Maisey Hampton, Fairford, Glos.

R.—J. T. HOBBS.

H.C.—G. F. MOORE, Chardwar, Bourton-on-Water, Glos.

C.—A. BRASSEY, Heythrop Park, Chipping Norton.—A. BRASSEY.—G. F. MOORE.

CLASS 136.—*Pair of Oxford Down Ram Lambs, dropped in* 1913. [9 entries.]

I. (**£10.**)—J. T. HOBBS, Maisey Hampton, Fairford, Glos.

II. (**£5.**)—T. Rich, Aldsworth, Northleach, Glos.

III. (**£2.**)—J. HORLICK, Cowley Manor, near Cheltenham.

R. for Special*—T. F. JAMES, Treluckey, Tregoney, Grampound Road.

R.—T. RICH.

H.C.—G. F. MOORE, Bourton-on-Water, Glos.

CLASS 137.—*Pen of three Oxford Down Shearling Ewes.* [5 entries.]

I. (**£10.**)—J. T. HOBBS, Maisey Hampton, Fairford, Glos.

II. (**£5.**)—J. HORLICK, Cowley Manor, near Cheltenham.

III. (**Bronze Medal.**)—G. F. MOORE, Bourton-on-Water, Glos.

(The Prizes in Class 138 were given by the Oxford Down Sheep Breeders' Association, and will be withheld until the animals awarded the prizes are registered in the Flock Book.)

CLASS 138.—*Pair of Oxford Down Ewe Lambs, dropped in* 1913. [7 entries.]

I. (**£6.**)—J. T. HOBBS, Maisey Hampton, Fairford, Glos.

II. (**£3.**)—G. F. MOORE, Chardwar, Bourton-on-Water, Glos.

III. (**£1.**)—T. RICH, Aldsworth, Northleach, Glos.

R.—J. HORLICK, Cowley Manor, near Cheltenham.

DORSET HORN.

CLASS 139.—*Dorset Horn Shearling Ram.* [6 entries.]

I. (**£10.**)—F. J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

II. (**£5.**)—F. J. MERSON & SON.

III. (**£2.**)—SIR E. A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, Dorset.

R.—A. JOHNSON, Symondsbury, Bridport.

---

* Given by the Royal Cornwall Agricultural Association for the best Ram or Ram Lamb in Class 116, 117, 119, 120, 121, 135 or 136, the property of a resident in Cornwall.

CLASS 140.—*Pair of Dorset Horn Ram Lambs, dropped after November* 1, 1912. [5 entries.]

I. (£10.)—A. JOHNSON, Symondsbury, Bridport.

II. (£5.)—F. J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

III. (£2.)—SIR E. A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, Dorset.

R.—SIR E. A. HAMBRO, K.C.V.O.

C.—C. H. CRAWFORD, Mappercombe, Powerstock, Dorset.

CLASS 141.—*Pen of three Dorset Horn Shearling Ewes.* [4 entries.]

I. (£10.)—SIR E. A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, Dorset.

II. (£5.)—A. JOHNSON, Symondsbury, Bridport.

III. (Bronze Medal).—SIR E. A. HAMBRO, K.C.V.O.

R.—F. J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

(The Prizes in Class 142 were given by the Dorset Horn Sheep Breeders' Association.)

CLASS 142.—*Pen of three Dorset Horn Ewe Lambs, dropped after November* 1*st*, 1912. [5 entries.]

I. (£10.) SIR E. A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, Dorset.

II. (£3.)—A. JOHNSON, Symondsbury, Bridport.

III. (£2.)—C. H. CRAWFORD, Mappercombe, Powerstock, Dorset.

R.—F. J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

DORSET DOWN.

(The Prizes in Class 143 were given by the Dorset Down Sheep Breeders' Association.)

CLASS 143.—*Dorset Down Shearling Ram.* [4 entries.]

I. (£10.)—EDEN & WATSON, Milborne Wick, Sherborne, Dorset.

II. (£3.)—EDEN & WATSON.

III. (£2.)—R. TORY, Charisworth Manor, Whitechurch, Blandford.

R.—G. C. WOOD HOMER, Bardolf Manor, Dorchester.

CLASS 144.—*Pair of Dorset Down Ram Lambs, dropped in* 1913. [5 entries.]

I. (£10.)—EDEN & WATSON, Milborne Wick, Sherborne, Dorset.

II. (£5.)—EDEN & WATSON.

III. (Bronze Medal.)—R. TORY, Charisworth Manor, Whitechurch, Blandford.

R.—R. TORY.

C.—G. C. WOOD HOMER, Bardolf Manor, Dorchester.

Class 145.—*Pen of three Dorset Down Shearling Ewes.* [5 entries.]

I. (£10.)—G. C. Wood Homer, Bardolf Manor, Dorchester.

II. (£5.)—R. Tory, Charisworth Manor, Whitechurch, Blandford.

III. (Bronze Medal.)—G. C. Wood Homer.

R.—Eden & Watson, Milborne Wick, Sherborne, Dorset.

C.—Eden & Watson.

EXMOOR HORN.

(The Prizes in Class 146 were given by the Exmoor Horn Sheep Breeders' Society.)

Class 146.—*Exmoor Horn Old Ram, two shear and upwards.* [3 entries.]

I. (£5.)—P. Smyth, Broford, Dulverton.

II. (£3.)—D. J. Tapp, Highercombe, Dulverton; bred by P. Smyth, Broford, Dulverton.

III. (£2.)—J. Robins, Lidcot Hall, High Bray, South Molton.

Class 147.—*Exmoor Horn Shearling Ram.* [4 entries.]

I. (£10.)—D. J. Tapp, Highercombe, Dulverton.

II. (£5.)—J. Robins, Lidcot Hall, High Bray, South Molton.

III. (Bronze Medal.)—H. L. Kingsford, Wood, South Tawton.

Class 148.—*Pen of three Exmoor Horn Shearling Ewes.* [4 entries.]

I. (£10.)—H. L. Kingsford, Wood, South Tawton.

II. (£5.)—J. Robins, Lidcot Hall, High Bray, South Molton.

III. (Bronze Medal).—D. J. Tapp, Highercombe, Dulverton.

DARTMOOR.

Class 149.—*Dartmoor Shearling Ram.* [8 entries.]

I. (£10.)—W. A. Johns & Sons, Cleave, Kelly, Lifton, Devon.

II. (£5.)—W. A. Johns & Sons.

III. (£2.)—E. P. Northey, Higher Bowden, Okehampton, Devon.

H.C.—F. W. Creber, Trewint, Menheniot, Cornwall; bred by J. Creber and Son, Menheniot.—F. W. Creber.—Messrs. Kingwell, Great Ash, South Brent, Devon.—Messrs. Kingwell.—E. P. Northey, Higher Bowden, Okehampton, Devon.

Class 150.—*Pair of Dartmoor Ram Lambs, dropped in* 1913. [6 entries.]

I. (£10.)—H. Northey, Lake, Lifton, Devon.

II. (£5.)—H. Northey.

III. (£2.)—Messrs. Kingwell, Great Aish, South Brent, Devon.

V.H.C.—W. Rowse, Okehampton.

Class 151.—*Pen of three Dartmoor Shearling Ewes.* [4 entries.]

I. (£10.)—W. Rowse, Okehampton.

II. (£5.)—W. Rowse.

III. (Bronze Medal.)—E. F. Damerell, Colebrook Farm, Plympton, Devon.

V.H.C.—Jeffery Bros., Parkhill Stud Farm, Ipplepen, Newton Abbot, Devon.

PIGS.

BERKSHIRE.

Class 152.—*Berkshire Boar, farrowed in* 1910, 1911 *or* 1912. [4 entries.]

I. (£7) and **R.** for Special*—L. Currie, Minley Manor, Farnborough, Hants, **Minley Warrior** (15982), born 7th January, 1911; s Highmore Viscount (12721), d Motcombe Kitty (14628), s d Dorset Edward (14007).

II. (£3.)—A. Hiscock, Manor Farm, Motcombe, **Compton Viscount**, born 21st May, 1910, bred by R. B. Vincent, Manor Farm, Waterson, Dorchester; s Peaceable No (14658 B.B.H.B.), d Compton Dora (14975 B.B.H.B.), s d Stratton King 1st (14496).

III. (Bronze Medal.)—J. S. McComb, Lily Hill, Bracknell, Berks, **Moundsmere Jack** (16533), born 14th June, 1912, bred by W. Buckley, Moundsmere Manor, Basingstoke; s Goldicote John (15003), d Compton Dowager 2nd (14979), s d Stratton King 1st (12496).

Class 153.—*Pair of Berkshire Boars, farrowed in* 1913. [5 entries.]

I. (£5.)—A. Hiscock, Manor Farm, Motcombe, born 10th January; s Goldicote Jack (entered Vol. 1913), d Vera (16234), s d Goldicote Euclid (15001).

II. (£2.)—W. Buckley, Moundsmere Manor, Basingstoke, born 8th January; s Moundsmere Columbus 3rd (16047), d Moundsmere Primrose 8th (16519), s d Moundsmere Mikado (15224).

III. (Bronze Medal.)—J. A. Fricker, Suddon Grange, Wincanton, born 5th January; s Robert, d Suddon Kate, s d Fightable F.B.

Class 154.—*Berkshire Breeding Sow, farrowed before* 1913. [3 entries.]

I. (£7) and Special **(£5.)***—L. Currie, Minley Manor, Farnborough, Hants, **Minley Primrose**, born 8th January, 1910: s Compton Supreme (13989), d Minley Rosamond (13908), s d Highmoor Viscount (12721).

---

* Given by the British Berkshire Society for the best Boar or Sow in the Berkshire Classes, entered in, or eligible for, the Herd Book, whose Sire and Dam, together with the name of its breeder, were entered in the Catalogue.

II. (£3.)—W. BUCKLEY, Moundsmere Manor, Basingstoke, **Moundsmere Brilliance** (16021), born 2nd December, 1910; s Postgrove (15609), d Crew's Brilliance (14607), s d Stallpits Dandy (13053).

III. (**Bronze Medal.**)—T. B. BOLITHO, Trewidden, Penzance, Cornwall, born 3rd September, 1911, bred by W. V. Judd, Eastanton, Andover, Hants; s Hayward Prince (15178), d Highclere Lass (14099).

CLASS 155.—*Pair of Berkshire Breeding Sows, farrowed in* 1913.

[5 entries.]

I. (£5.)—A. HISCOCK, Manor Farm, Motcombe, born 10th January; s Goldicote Jack (entered Vol. 1913), d Vera (16234), s d Goldicote Euclid (15001).

II. (£2.)—W. BUCKLEY, Moundsmere Manor, Basingstoke, born 1st January; s Moundsmere Curioso (15223), d Compton Dowager 2nd (14979).

III. (**Bronze Medal.**)—A. HISCOCK, Manor Farm, Motcombe, born 10th January; s Goldicote Jack (entered Vol. 1913), d Vera (16234), s d Goldicote Euclid (15001).

R.—J. A. FRICKER, Suddon Grange, Wincanton, born 5th January; s Robert, d Suddon Kate, s d Fightable F.B.

H.C.—L. CURRIE, Minley Manor, Farnborough, Hants, born 2nd January; s Minley Warrior (15982), d Minley Trixie (15987).

LARGE BLACK.

CLASS 156.—*Large Black Boar, farrowed in* 1910, 1911, *or* 1912.

[8 entries.]

I. (£7.)—T. F. HOOLEY, Dry Drayton, near Cambridge, **Drayton King** (3767), born 30th June, 1911; s Henley Achilles (1999), d Marchioness 7th (7580), s d The Prior (1427).

II. (£3.)—W. WILLS, Marlwood, Thornbury, Glos., **Drayton Dandy** (3331), born 3rd January, 1910, bred by T. F. Hooley, Dry Drayton, Cambridge; s Drayton Demon 4th (2353), d Drayton Dainty 11th (7690), s d Henley Achilles (1999).

III. (£2) and **R.** for Special*—W. S. WARD, Menna, Grampound Road, Cornwall, **Brent-General** (3687), born 3rd January, 1911, bred by H. J. Kingwell, Great Aish, South Brent, South Devon; s The Prior (1427), d Brent Sunflower (5004), s d Trescowe Pride (875).

R.—J. O. MUNTZ, Heathcot, Yelverton, **Heathcot Excelsior** (3909), born 9th June, 1912; s Cornwood Curio (3707), d Yelland Primrose (8930), s d Hinton King of Spades (2141).

V.H.C.—L. CLARKE, Yelland, Fremington, Devon, **Cornwood Curio,** born June, 1911, bred by J. H. Glover, Cornwood, South Devon; s Drayton Dandy (3331), d Cornwood Lass 32nd (8880), s d Cornishman 2nd.

H.C.—J. C. OLVER, Woodland Valley, Ladock, Cornwall, **Old Fashion,** born 12th February, 1910, bred by — Paul, Treburther Ruan, High Lanes; s Prior of the Valley (2737), d Carclew Choice (8508), s d Carclew Joey (1757).

---

* Given by the Royal Cornwall Agricultural Association for the best Boar in Class 152, 153, 156, 157, 161 or 162, the property of a resident in Cornwall.

CLASS 157.—*Pair of Large Black Boars, farrowed in* 1913.

[9 entries.]

I. (£5.)—T. F. HOOLEY, Dry Drayton, near Cambridge, born 12th January; s Oaklands Victor (3579), d Drayton Lucky Girl (8490), s d Drayton Demon 4th (2353).

II. (£2.)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, born 9th January; s Tiptree 1st (2933), d Primley Damson (10171).

III. (£1.)—W. WILLS, Marlwood, Thornbury, Glos., born 4th January; s Drayton Dandy (3331), d Cornwood Lass 31st (8468), s d Cornwood Earl (2189).

R.—J. WARNE, Treveglos, St. Mabyn, S.O., born 3rd February; s Vixley None Such (3467), d Treveglos Lass 6th (10526), s d Sudbourne Jock (3005).

V.H.C.—W. S. WARD, Menna, Grampound Road, Cornwall, born 7th January; s Brent General (3687), d Menna Queen 8th (10106), s d Wonder of the West (3017).

H.C.—J. O. MUNTZ, Heathcot, Yelverton, **Heathcot Galahad** (4029), and **Heathcot Goliath** (4033); s Cornwood Curio (3707), d Yelland Primrose (8930), s d Hinton King of Spades (2141).

C.—T. WARNE, Trevisquite Manor, St. Mabyn, Cornwall, born 3rd January; s Treveglos Jocky (3811), d Trevisquite Content 4th (6934).

CLASS 158.—*Large Black Breeding Sow, farrowed before* 1913.

[7 entries.]

I. (£7.)—J. H. GLOVER, Cornwood, **Cornwood Lass 36th,** born 1st June, 1911; s Drayton Dandy (3331), d Cornwood Lass (8468), s d Cornwood Earl (2189).

II. (£3) and **R.** for Special*—J. WARNE, Treveglos, St. Mabyn, S.O., **Treveglos Lass 6th** (10526), born 23rd January, 1911; s Sudbourne Jock (3005), v Treveglos Lass 2nd (6220), s d Trevisquite Confidence (1203).

III. (£2.)—W. J. WARREN, Farthing Farm, Comeytrowe, Taunton, **Kibbear Black Lady 2nd** (10944), born 31st August, 1911; s Cornwood George C (3519), d Ashpriors Lady (7066), s d Cothelston Victor (1435).

R.—J. WARNE, **Treveglos Angelina,** born 10th January, 1912; s Prior of the Valley (2737), d Treveglos Angelina (8676), s d Treveglos Pride (2221).

V.H.C.—J. C. OLVER, Woodland Valley, Ladock, **Queen of the Valley 6th,** born July, 1911; s Bosoha Masterpiece (3395), d Queen of the Valley 2nd, s d The Prior.

H.C.—T. WARNE, Trevisquite Manor, St. Mabyn, Cornwall, **Trevisquite Perfection,** born 3rd May, 1912; s Trekelland Masterpiece (2267), d Trevisquite Content 5th (10868).

---

* Given by the Royal Cornwall Agricultural Association for the best Sow in Class 154, 155, 158, 159, 160, 163, or 164, the property of a resident in Cornwall.

(The Prizes in Class 159 were given by the Large Black Pig Society).

Class 159.—*Large Black Breeding Sow, not exceeding* 12 *months old on May* 1*st*, 1913. [9 entries.]

I. (£7.)—W. Wills, Marlwood, Thornbury, Glos., **Lustleigh Violet 6th,** born 15th May, 1912; s Drayton Dandy (3331), d Lustleigh Violet 4th (10306), s d Cornwood Earl 2nd (2997).

II. (£3.)—T. F. Hooley, Dry Drayton, near Cambridge, **Drayton Annie** (11456), born 2nd May, 1912; s Oaklands Victor (3579), d Drayton Daisy 2nd (9708), s d Henley Victor (2947).

III. (£2.)—J. O. Muntz, Heathcot, Yelverton, **Heathcot Exquisite** (11140), born 9th June, 1912; s Cornwood Curio (3707), d Yelland Pimrose (8930), s d Hinton King of Spades (2141).

R.—W. S. Ward, Menna, Grampound Road, Cornwall, **Menna Queen 10th,** born 5th May, 1912; s Drayton Gay Minstrel (3461), d Drayton Lucky Girl (3490), s d Drayton Demon 4th (2353).

V.H.C.—J. C. Olver, Woodland Valley, Ladock, Cornwall, born July, 1912; s Bosoha Masterpiece, d Queen of the Valley 5th, s d Tinten Lucky Boy.

Class 160.—*Pair of Large Black Breeding Sows, farrowed in* 1913. [9 entries.]

I. (£5.)—W. Wills, Marlwood, Thornbury, Glos., born 12th January; s Drayton Dandy (3331), d Lustleigh Violet 4th (10306), s d Cornwood Earl 2nd (2997).

II. (£2.)—W. and H. Whitley, Primley Farm, Paignton, Devon, born 9th January; s Tiptree 1st (2933), d Primley Damson (10170).

III. (£1.)—T. F. Hooley, Dry Drayton, near Cambridge, born 12th January; s Oaklands Victor (3579), d Drayton Violet (9010), s d Drayton Demon 4th (2353).

R.—J. Warne, Treveglos, St. Mabyn, S.O., born 3rd February; s Bixley None Such (3467), d Treveglos Lass 6th (10526), s d Sudbourne Jock (3005).

V.H.C.—W. S. Ward, Menna, Grampound Road, born 7th January; s Brent General (3687), d Menna Queen 8th (10106), s d Wonder of the West (3117).

H.C.—Viscount Falmouth, Tregothnan, Truro, born 17th February; s Tregothnan Prince, d Tregothnan Lady, s d Trekelland Masterpiece.

LARGE WHITE.

Class 161.—*Large White Boar, farrowed in* 1910, 1911 *or* 1912. [5 entries.]

I. (£7.)—J. M. Dugdale, Llwyn, Llanfyllin, Montgomeryshire, **Llwyn Turk** (15099), born 4th January, 1911; s Worsley Turk 25th (15529), d Llwyn Sunlight (32482), s d Hero of Llwyn (12565).

II. (£3.)—R. M. Knowles, Colston Bassett, Bingham, Notts, **Worsley Samson 30th** (15523), born 8th March, 1910, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s Samson of Worsley (10095), d Miss Hollingworth 141st (14278), s d Earl of Worsley (6371).

III. (**Bronze Medal**) and Special (£3.)*—G. J. Day, Kelleserth, St. Erme, **Lord Camborne,** born 19th May, 1911, bred by S. R. Williams, Boskear, Camborne; s Lord Brier, d Worsley Empress 29th.

R.—E. Hosking, Rosevidney, Ludgvan, **West Derby Goliath 13th** (15401), born 1st January, 1911, bred by R. E. W. Stephenson, Tue Brook, Liverpool; s Bourne Giant Goliath (10631), d Wyboston Bella (26718), s d Bottesford Eclipse (10615).

Class 162.—*Pair of Large White Boars, farrowed in* 1913. [4 entries.]

I. (£5.)—Lord Lucas, Wrest Park, Ampthill, Beds, born 2nd January; s Roger of Tholthorpe (13987), d Wyboston Frisca (26758), s d Bottesford Eclipse (10615).

II. (£2.)—E. Hosking, Great Rosevidney, Ludgvan, born 1st January; s Wrest Emperor, d Lady 5th, s d Rosevidney Turk.

III. (**Bronze Medal.**)—G. Blight, Tregonning, Breage, Helston, Cornwall, born 5th January; s Jay of Tregonning (15061), d Tregonning Lady, s d Nottingham Dogger (10001).

R.—J. M. Dugdale, Llwyn, Llanfyllin, Mont., born 14th January; s Emperor of Llwyn (Vol. xxix.), d Llwyn Queen 4th (32478), s d Worsley Turk 25th (15529).

Class 163.—*Large White Breeding Sow, farrowed before* 1913. [6 entries.]

I. (£7.)—J. Carson, Crystalbrook, Theydon, Bois, Essex, **Wyboston Annettie** 30394 (419), born 4th June, 1910, bred by J. and R. Purvis, Wyboston, St. Neots, Hunts.; s Monarch of Wyboston (12659), d Wyboston Eva (30446), s d Hermit of Wyboston (13669).

II. (£3) and Special (£2)†—E. Hosking, Great Rosevidney, Ludgvan, **Rosevidney Lady 4th,** born 12th May, 1909; s Rosevidney Model, d Lady 3rd, s d Borrowfield Lad 9th.

III. (£2.)—J. M. Dugdale, Llwyn, Llanfyllin, Mont., **Llwyn Queen 3rd** (32476), born 4th January, 1911; s Worsley Turk 25th (15529), d Llwyn Queen (25548), s d Emperor of Worsley (10791).

R.—C. Spencer, Holywell Manor, St. Ives, Hunts, **Holywell Artless** (25378), born 24th March, 1908; s Holywell Emperor D (9907), d Holywell Accent (20990), s d Holywell Sowerby (7775).

---

* Given by the Royal Cornwall Agricultural Association for the best Boar in Class 152, 153, 156, 157, 161 or 162 the property of a resident in Cornwall.

† Given by the Royal Cornwall Agricultural Association for the best Sow in Class 154, 155, 158, 159, 160, 163 or 164, the property of a resident in Cornwall.

V.H.C.—R. M. Knowles, Colston Bassett Hall, Bingham, Notts, **Borrowfield Rose 140th,** born 4th January, 1910; s Colston King Manoel (12423), d Borrowfield Rose 120th A (20466), s d Vanguard (7261).

H.C.—R. M. Knowles, **Borrowfield Rose 141st,** born 4th January, 1910; s Colston King Manoel (12423), d Borrowfield Rose 120th A (20466), s d Vanguard (7261).

Class 164.—*Pair of Large White Breeding Sows, farrowed in* 1913.
[5 entries.]

I. (£5.)—Lord Lucas, Wrest Park, Ampthill, Beds, born 2nd January; s Roger of Tholthorpe (13987), d Wyboston Frisca (26758), s d Bottesford Eclipse (10615).

II. (£2.)—J. M. Dugdale, Llwyn, Llanfyllin, Mont., born 11th January; s Emperor of Llwyn (Vol. xxix.), d Llwyn Sunlight 5th (32486).

III. (Bronze Medal.)—J. M. Dugdale, born 5th January; s Emperor of Llwyn (Vol. xxix.), d Llwyn Matchless (Vol. xxix.).

R.—G. Blight, Tregonning, Breage, Helston, Cornwall, born 5th January; s Jay of Tregonning Breage, d Tregonning Lady, s d Nottingham Dodger (10001).

V.H.C.—E. Hosking, Great Rosevidney, Ludgvan, born 5th January, bred by D. R. Daybell, Bottesford, Nottingham: s Turk of Bottesford, d Sapperton Jewel.

MIDDLE WHITE.

Class 165.—*Middle White Boar, farrowed in* 1910, 1911 *or* 1912.
[4 entries.]

I. (£7.)—C. Spencer, Holywell Manor, St. Ives, Hunts, **Sefton of Holywell,** born 14th January, 1910, bred by the Earl of Sefton, Croxteth Hall, Liverpool; s Tarbock Clumber (12101), d Tarbock Pattie 20th (22098), s d Walton Turret 12th (9453).

II. (£3.)—L. C. Paget, Middlethorpe Hall, York, **Turret of Wharfedale** (15703), born 6th January, 1911, bred by the Earl of Sefton, Croxteth Hall, Liverpool; s Tarbock Turret 2nd (11313), d Tarbock Rose 11th (27168), s d Tarbock Prince (12103).

III. (Bronze Medal).—G. C. Wood Homer, Bardolf Manor, Dorchester, **Warrior of Holywell,** born 22nd January, 1911; s Sefton of Holywell (14465), d Holywell Rosella 2nd (24094), s d Holywell Rosario (8857).

Class 166.—*Pair of Middle White Boars, farrowed in* 1913.
[2 entries.]

I. (£5.)—L. C. Paget, Middlethorpe Hall, York, born 7th January; s Wharfedale Valentine (15717), d Wharfedale Gracious (34354), s d Tarbock Turret 2nd (11313).

II. (Silver Medal.)—G. C. Wood Homer, Bardolf Manor, Dorchester, born 2nd January; s Wharfedale Duke of York (15713), d Bardolf Motcombe, s d Stuart's Fame.

CLASS 167.—*Middle White Breeding Sow, farrowed before* 1913.
[3 entries.]

I. (£7.)—C. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Perfection** (Vol. xxix.), born 22nd January, 1911; s Sefton of Holywell (14465), d Holywell Rosella 2nd (24094), s d Holywell Rosario (8857).

II. (£3.)—L. C. PAGET, Middlethorpe Hall, York, **Wharfedale Boom** (34312), born 1st March, 1911; s Tarbock Turret 2nd (11313), d Vulcanite of Wharfedale (27170), s d Wharfedale Vulcan (11333).

III. (Bronze Medal.)—G. C. WOOD HOMER, Bardolf Manor, Dorchester, born 5th March, 1912; s Wharfedale Duke of York (15713), d Bardolf Eliza, s d East Craig's Prince (5705).

CLASS 168.—*Pair of Middle White Breeding Sows, farrowed in* 1913.
[3 entries.]

I. (£5.)—L. C. PAGET, Middlethorpe Hall, York, born 9th January, bred by the Earl of Sefton, Croxteth Hall, Liverpool; s Reveller of Croxteth (15673), d Rose of Tarbock 10th (30922), d Tarbock Prince (12103).

II. (£2.)—G. C. Wood HOMER, Bardolf Manor, Dorchester, born 2nd January; s Wharfedale Duke of York (15713), d Bardolf Motcombe, s d Stuart's Fame (11309).

III. (Bronze Medal.)—G. C. WOOD HOMER, born 15th January; s Warrior of Holywell (16809), d Bardolf Smithfield (36728), s d Wharfedale Duke of York.

TAMWORTH.

CLASS 169.—*Tamworth Boar, farrowed in* 1910, 1911 *or* 1912.
[7 entries.]

I. (£7.)—D. W. PHILIP, The Redlands, Whitacre, near Birmingham, **Whitacre Enterprise,** born 5th January, 1912; s Duke of Whitacre (15773), d Cholderton Golden Beauty 2nd (34480), s d Rolleston Victor (8375).

II. (£3.)—R. IBBOTSON, Knowle, Warwickshire, **Warwickshire,** born 13th July, 1911, bred by F. Griffiths, Wootton, Wawen; s Apricotina (14529), d Knowle Edstone (Vol. xxix.), s d Knowle Lord Minto (12191).

III. (£2.)—R. IBBOTSON, **Osmaston Buxus,** born 10th August, 1910, bred by Sir P. Walker, Osmaston, Derby; s Dick of Osmaston (13143), d Acacia of Osmaston (27210).

R.—R. IBBOTSON, **Knowle Antonio,** born 7th February, 1912; s Knowle Sylvanus (14617), d Knowle Empress Queen (31164).

V.H.C.—C. L. COXON, Webton Court, Madley, Hereford, **Bishop of Webton** (15741), born 16th January, 1911, bred by Sir P. Walker, Bart., Osmaston Manor, Derbyshire; s Elford Bishop (13175), d Arabis of Osmaston (27222).

H.C.—E. DE HAMEL, Middleton Hall, Tamworth **Middleton Milo** (15819), born 2nd January, 1911; s Mason of Middleton (13217), d Middleton M'bega (31226), s d Gay Lad of Middleton (12181).

C.—E. DE HAMEL, **Middleton Milan** (15809), born 21st July, 1910; s Mason of Middleton (13217), d Middleton Merker (31228), s d Gay Lad of Middleton (12181).

CLASS 170.—*Pair of Tamworth Boars, farrowed in* 1913. [3 entries.]

I. (£5.)—R. IBBOTSON, Knowle, Warwickshire, born 3rd January; s Knowle Professor (15793), d Kathleen (34556).

II. (£2.)—C. L. COXON, Webton Court, Madley, born 10th January; s Bishop of Webton (15741), d Cherry of Webton (Vol. xxviii., 34478), s d Knowle Burleigh (13187).

III. (Bronze Medal.)—MRS. E. MORANT, Brokenhurst Park, Hants, born 7th January; s Dick of Osmaston (13143), d Dilton Magellie (31128), s d Dilton Puritan (11355).

CLASS 171.—*Tamworth Breeding Sow, farrowed before* 1913. [7 entries.]

I. (£7.)—R. IBBOTSON, Knowle, Warwickshire, **Madeline** (34558), born 11th November, 1912, bred by Sir P. Walker, Knowle, Warwickshire; s Dick of Osmaston (13143), d Aster of Osmaston (27216).

II. (£3.)—R. IBBOTSON, **Kathleen** (34556), born 10th November, 1910, bred by Sir P. Walker, Osmaston, Derby: s Dick of Osmaston (13143), d Aster of Osmaston (27216).

III. (£2.)—R. IBBOTSON, **Knowle Rosalind 2nd,** born 4th January, 1910; s Knowle Baron (12189), d Knowle Rosie (22256).

R.—D. W. PHILIP, The Redlands, Whitacre, near Birmingham, **Whitacre Cherry Blossom** (31300), born 13th June, 1909; s Redskin of Whitacre (12219), d Whitacre Cherry Ripe (22320), s d Director of Whitacre (10381).

V.H.C.—C. L. COXON, Webton Court, Madley, born 17th January, 1912; s Rufus of Webton (15861), d Cherry of Webton (34478), s d Knowle Burleigh (13187).

H.C.—E. DE HAMEL, Middleton Hall, Tamworth, **Middleton Merker** (31228), born 4th January, 1909; s Gay Lad of Middleton (12181), d Middleton Microcosma (24364), s d Middleton Majestic (8971).

C.—E. DE HAMEL, **Middleton Masika** (34618), born 4th January, 1910; s Gay Lad of Middleton (12181), d Middleton Maru (24352), s d Middleton Matoppo (9537).

CLASS 172.—*Pair of Tamworth Breeding Sows, farrowed in* 1913. [3 entries.]

I. (£5.)—MRS. E. MORANT, Brokenhurst Park, Hants, born 7th January; s Dick of Osmaston (13143), d Dilton Magellie (31128), s d Dilton Puritan (11355).

II. (£2.)—R. IBBOTSON, Knowle, Warwickshire, born 2nd January: s Knowle Professor (15793), d Madeline (34558).

III. (Bronze Medal.)—C. L. COXON, Webton Court, Madley, born 10th January; s Bishop of Webton (15741), d Cherry of Webton (34478), s d Knowle Burleigh (13187).

ANY BREED.

(The Prizes in Classes 173 and 174 were given by Messrs. Chas. and Thos. Harris & Co., Ltd., Calne, Wilts.)

CLASS 173.—*Boar most suitable for producing the best class of pigs for Wiltshire Bacon.* [11 entries.]

I. (Silver Cup.)—R. IBBOTSON, Knowle, Warwickshire, **Warwickshire**, born 13th July, 1911, bred by F. Griffiths, Wootton, Wawen; s Apricotina (14529), d Knowle Edstone (Vol. xxix.), s d Knowle Lord Minto (12191).

R.—C. L. COXON, Webton Court, Madley, Hereford, **Bishop of Webton** (15741), born 16th January, 1911, bred by Sir P. Walker, Bart., Osmaston Manor, Derbyshire; Elford Bishop (13175), d Arabis of Osmaston (27222).

CLASS 174.—*Hilt or Sow most suitable for producing the best class of pigs for Wiltshire Bacon.* [8 entries.]

I. (Silver Cup.)—J. M. DUGDALE, Llwyn, Llanfyllin, Mont., **Llwyn Queen 3rd** (32476), born 4th January, 1911; s Worsley Turk 25th (15529), d Llwyn Queen (25548), s d Emperor of Worsley (10791).

R.—C. L. COXON, Webton Court, Madley, born 17th January, 1912; s Rufus of Webton (15861), d Cherry of Webton (34478), s d Knowle Burleigh (13187).

PRODUCE.

CIDER.

(Open to Growers or Makers.)

(The Winners in these Classes could have Gold, Silver or Bronze Medals instead of Money Prizes if they preferred them.)

CLASS 175.—*Cask of not less than* 18 *and not more than* 30 *gallons of Cider, of the* 1912 *Vintage.* [7 entries.]

I. (Gold Medal.)—H. J. DAVIS.

II. (£2.)—PULLIN BROS.

III. (£1.)—W. T. S. TILLEY.

R.—J. H. SKYRME.

CLASS 176.—12 *Bottles of Cider, of the* 1912 *vintage.* [8 entries.]

I. (Gold Medal.)—H. J. DAVIS.

II. (£2.)—VICKERY BROS.

III. (£1.)—QUANTOCK VALE CIDER CO.

H.C.—W. T. S. TILLEY.

CLASS 177.—*Cask of not less than* 18 *and not more than* 30 *gallons of Cider, of the* 1912 *vintage.* [11 entries.]

I. (£3.)—W. T. S. TILLEY.
II. (Silver Medal.)—H. J. DAVIS.
III. (£1.)—W. T. S. TILLEY.
R.—PULLIN BROS.
H.C.—T. STONE.
C.—CO. ARMAGH CIDER CO.

CLASS 178.—12 *Bottles of Cider, of the* 1912 *vintage.* [16 entries.]

I. (£3.)—W. T. S. TILLEY.
II. (Silver Medal.)—H. J. DAVIS.
III. (£1.)—W. T. S. TILLEY.
R.—W. T. S. TILLEY.
V.H.C.—T. STONE.
H.C.—H. J. DAVIS. T. STONE.
C.—H. J. DAVIS.

CLASS 179.—12 *Bottles of Cider, of any year previous to* 1912 *vintage.* [9 entries.]

I. (Gold Medal.)—H. J. DAVIS.
II. (Silver Medal.)—H. J. DAVIS.
III. (£1.)—T. STONE.
R.—VICKERY BROS.
H.C.—W. T. S. TILLEY.
C.—CO. ARMAGH CIDER CO.—J. H. SKYRME.—T. STONE.—W. T. S. TILLEY.

CHEESE.

CLASS 180.—*Three Cheddar Cheeses (not less than* 56*lbs. each), made in* 1912. [9 entries.]

I. (£15.)—P. H. FRANCIS.
II. (£10.)—J. CANDY.
III. (£5.)—J. SAGE.
V.H.C.—G. D. TEMPLEMAN.
H.C.—E. G. PANES.
C.—R. H. AND P. W. BRAKE.

CLASS 181.—*Three Cheddar Cheeses (not over 56lbs. each), made in* 1912. [5 entries.]

I. (£8.)—J. SAGE.
II. (£5.)—G. D. TEMPLEMAN.
V.H.C.—H. H. PICKFORD.
H.C.—E. G. PANES.

CLASS 182.—*Three Single Gloucester or Wilts Cheeses, made in* 1913. [4 entries.]

I. (£6.)—P. H. FRANCIS.
II. (£4.)—G. D. TEMPLEMAN.
H.C. J. SAGE.

CLASS 183.—*Eight Loaf or other Truckle Cheeses, made in* 1912. [2 entries.]

I. (£5.)—J. CANDY.
V.H.C.—H. H. PICKFORD.

CLASS 184.—*Three Caerphilly Cheeses, made in* 1913. [11 entries.]

I. (£5.)—E. E. HODGES.
II. (£3.)—WILTS UNITED DAIRIES (LTD.).
III. (£2.)—R. NEVILLE-GRENVILLE.

CREAM CHEESE, BUTTER & CREAM.

(These Classes were not open to Professional Teachers.)

(The Prizes in Classes 188, 189, 193 and 195 were given by the Cornwall County Council.)

CLASS 185.—*Three Cream or other Soft Cheeses.* [10 entries.]

I. (£3.)—D. HILDICK.
II. (£2.)—MRS. A. MARTIN.
III. (£1.)—MISS M. G. PRIDEAUX.
R.—G. VENNING.

CLASS 186.—*3lbs. of Fresh (or very slightly salted) Butter.* [23 entries.]

I. (£4.)—MRS. OXENHAM.
I. (£4.)—MRS. J. WAY.
II. (£3.)—MRS. L. R. MILDON.

II. (£3.)—G. Venning.

III. (£2.)—Mrs. R. Gerry.

III. (£2.)—J. S. McComb.

IV. (£1.)—Mrs. M. Bullock.

IV. (£1.)—Mrs. J. H. Hearn.

R.—Mrs. A. A. Bere.

R.—A. F. Somerville.

V.H.C.—Miss E. Barnicoat.—Mrs. W. H. Palmer.—M. Wingfield Stratford.

Class 187.—*3lbs. of Fresh (or very slightly salted) Butter, made from scalded cream.* [21 entries.]

I. (£4.)—Mrs. L. R. Mildon.

II. (£3.)—Mrs. J. Way.

III. (£2.)—Mrs. Thomas.

IV. (£1.)—Mrs. J. Pearce.

R.—Miss E. Rowe.

V.H.C.—Mrs. A. A. Bere.—Mrs. J. H. Hearn.—Mrs. Oxenham.—A. F. Somerville.

H.C.—Mrs. M. Bullock.

Class 188.—*2lbs. of Fresh (or very slightly salted) Butter, made in Cornwall from raw separated cream.* [14 *entries.*]

I. (£1 5s.)—Miss E. Barnicoat.

II. (15s.)—Mrs. M. Bullock.

III. (7s. 6d.)—G. Venning.

IV. (5s.))—Mrs. Pomeroy.

R.—Mrs. J. M. Martin.

V.H.C.—Mrs. F. Williams.

Class 189. *2lbs.* of *Fresh (or very slightly salted) Butter, made in Cornwall from scalded or clotted cream.* [19 entries.]

I. (£1 5s.)—Mrs. M. Bullock.

II. (15s.)—G. Venning.

III. (7s. 6d.)—Mrs. Pomeroy.

IV. (5s.)—Miss E. Rowe.

R.—Miss S. A. Perry.

V.H.C.—Miss Eddy.—Mrs. J. Pearce.—Mrs. M. C. Williams.

CLASS 190.—*3lbs. of Butter, in the making of which no salt has been used, judged on the last day of Show.* [17 entries.]

I. (£4.)—MRS. M. BULLOCK.

II. (£3.)—A. F. SOMERVILLE.

III. (£2.)—MRS. OXENHAM.

IV. (£1.)—MRS. J. WAY.

R.—B. MARTIN.

V.H.C.—MRS. L. R. MILDON.

H.C.—MRS. J. H. HEARN.

C.—MRS. R. GERRY.

CLASS 191.—*Not less than* 12*lbs. of Fresh Butter packed for transit.* [4 entries.]

I. (£3.)—G. VENNING.

II. (£1 10s.)—MISS E. BARNICOAT.

R.—MISS M. G. PRIDEAUX.

CLASS 192.—12*lbs. of Keeping Butter, in a jar or crock, delivered to the Secretary four weeks before the Show.* [10 entries.]

I. (£4.)—MRS. L. R. MILDON.

II. (£3.)—MRS. A. A. BERE.

III. (£2.)—MISS EDDY.

R.—B. MARTIN.

CLASS 193.—*2lbs. of Butter, to be tested for it keeping qualities, allowed to be slightly salted, but no other preservatives to be used, delivered to the Secretary* 30 *days before the Show.* [23 entries.]

I. (£2.)—MRS. OXENHAM.

II. (£1 5s.)—MRS. A. A. BERE.

III. (15s.)—MRS. L. R. MILDON.

IV. (10s.)—MRS. THOMAS.

R.—MISS EDDY.

V.H.C.—MRS. R. GERRY.—G. VENNING.

H.C.—MRS. J. H. HEARN.—B. MARTIN.—A. F. SOMERVILLE.—MRS. J. WAY.

CLASS 194.—*Four half-pounds of Scalded Cream.* [17 entries.]

I. (£3.)—MRS. T. INCH.

II. (£2.)—W. R. BEER.

III. (£1.)—MISS EDDY.

IV. (10s.)—MRS. J. M. MARTIN.

R.—B. MARTIN.

CLASS 195.—*2lbs of Clotted Cream in one glass dish ready for table, scalded from milk, by a resident in Cornwall.* [17 entries.]

I. (**£1.**)—MRS. J. PEARCE.

II. (**10s.**)—MRS. M. C. WILLIAMS.

III. (**5s.**)—MRS. F. WILLIAMS.

R.—MRS. THOMAS.

H.C.—MISS E. BARNICOAT.—B. MARTIN.—MRS. E. E. MARTIN.—G. VENNING.

COMPETITIONS.

BUTTER-MAKING.

(No winner of a first prize given by this Society for Butter-making during the last three years was eligible to compete in Class 197 or 199.)

(The Prizes in Classes 196, 198, 200, 202, 203 and 205 were given by the Cornwall County Council, except the First Prize in Class 200, which was given by the Royal Cornwall Agricultural Association.)

CLASS 196.—*For Students over 16 years of age who have passed through the Cornwall County Dairy School. On the first day of the Show.* [58 entries.]

I. (**£2.**)—MISS G. MICHELL.

II. (**£1 10s.**)—MISS D. BICE.

III. (**£1.**)—MISS D. SALMON.

IV. (**10s.**)—MISS L. A. TRERISE.

V. (**5s.**)—MISS D. E. NICHOLAS.

VI. (**5s.**)—MISS E. T. JEWELL.

H.C.—MISS O. M. HOOKER.

C.—MISS M. SANSOM.—MISS I. SPARGO.—MISS E. STICKLAND.—T. M. TREWHELLA.—MISS G. B. TUCKETT.

CLASS 197.—*For first year Students who had been through a course of instruction in Butter-making at any County Council School since the Society's last Show. On the first day of the Show.* [47 entries.]

I. (**£4.**)—MRS. L. R. MILDON.

II. (**£3.**)—MISS M. STRUGG.

III. (**£1 10s.**)—MISS E. M. TREGEA.

IV. (**£1.**)—MISS G. K. RICHARDS.

R.—Miss E. E. Giles.

V.H.C.—Mrs. M. Andrew.—Miss K. C. Craze.—Miss M. J. Eddy.—J. Grove.—Miss J. Heywood.—Miss L. Huxtable.—Miss J. Pascoe.—Miss S. A. Perry.—Miss A. M. Thomas.—T. M. Trewhella.

H.C.—Miss K. C. Ball.—Mrs. N. Hawke.—Miss H. J. Hocking.—Miss M. Lawrence.—Miss H. Le Shirel.—Miss B. Osborne.—Miss E. J. Ward.

Class 198.—*For Butter-making in accordance with the system taught in the Cornwall County Dairy School, by Competitors who had not previously won a prize at the Royal Cornwall Agricultural Show. On the second day of the Show.* [56 entries.]

I. (£2.)—Miss L. Huxtable.

II. (£1.)—Miss G. Grove.

III. (15s.)—Miss H. Vercoe.

IV. (10s.)—Miss E. E. Giles.

Equal V. (2s. 6d.)—Miss E. Bice.

Equal V. (2s. 6d.)—Miss O. M. Hooker.

R.—Miss S. Cardell.

V.H.C.—Miss M. P. Drew.—Miss A. Grove.—J. Grove.—Miss H. Le Shirel.—Mrs. W. H. Mitchell.—Miss G. K. Richards.—Miss L. Vercoe.

H.C.—Miss M. Andrew.—Miss S. F. Biddick.—Miss M. W. Cory.—Miss K. Cruddas.—Miss A. Hocking.—Miss G. Knight.—Miss M. Lawrence.—S. O. Lawry.—Miss G. Michel.—Miss B. Osborne.—Miss J. Poscoe.—Miss S. A. Perry.—Miss D. Salmon.—Miss G. H. Tregea.—Miss E. M. Tregea.

C.—J. H. Harris.—Miss D. Hawke.—Miss J. Heywood.—Miss H. J. Hocking.—Miss F. M. Jarvis.—Miss M. H. Lugg.—Miss G. L. Nelder.—Miss O. Polkinghome.—Miss Rosie Roberts.—Miss R. F. Ward.

Class 199.—*For Men and Women, on the second day of the Show.* [35 entries.]

I. (£4.)—Miss R. James.

II. (£3.)—Miss E. T. Jewell.

III (£1 10s.)—Miss E. M. James.

IV. (£1.)—Miss G. B. Tuckett.

R.—Miss J. James.

V.H.C.—Miss D. Bice.—Miss M. B. Hugoe.—Miss D. E. Nicholas.

H.C.—Miss M. A. Dalrymple.—Mrs. A. Martin.—Mrs. W. H. Mitchell—Miss C. Pantall.—Miss L. A. Trerise.

C.—Miss M. P. Drew.—Miss O. M. Hooker.—Miss J. Nankervis.—Miss G. L. Nelder.—Miss E. Pascoe.—Miss J. L. Prichard.—Miss D. Salmon.—Miss M. Sansom.—Miss H. Soper.—Miss E. Stephens.—Miss E. Stickland.—Miss A. Tregea.—T. M. Trewhella.

Class 200.—*For Students, not over* 16 *years of age, who have passed through the Cornwall County Dairy School. On the 3rd day of the Show.* [13 entries.]

I. (£3.)—Miss L. M. Mitchell.

II. (£1 5s.)—Miss E. M. Tregea.

III. (15s.)—Miss E. E. Giles.

IV. (5s.)—Miss B. H. Tregea.

R.—Miss G. Knight.

V.H.C.—Miss D. Beaglehole.—Miss I. M. Cowling.—Miss L. Harris.—Miss M. A. Osborne.—Miss M. M. Tremewan.

H.C.—Miss F. M. Jarvis.—Miss E. F. Lang.

C.—Miss Rhoda Roberts.

Class 201.—*For Men and Women, on the third day of the Show.* [35 entries.]

I. (£4.)—Miss E. M. James.

II. (£3.)—Miss A. Tregea.

III. (£1 10s.)—Miss M. B. Hugoe.

IV. (£1.)—Miss G. B. Tuckett.

R.—T. M. Trewhella.

V.H.C.—Miss D. Bice.—Miss O. M. Hooker.—Miss L. Huxtable.—Miss G. L. Nelder.—Miss D. E. Nicholas.—Miss C. Pantall.—Miss J. L. Prichard.—Miss M. Sansom.—Miss H. Soper.—Miss M. Stickland.—Miss L. A. Trerise.—Miss H. M. Williams.

H.C.—Miss E. Bice.—Mrs. J. C. Harris.—Miss E. J. Hockley.—Mrs. W. H. Mitchell.—Miss E. Rowe.—Miss D. Salmon.—Miss E. Stephens.—Miss L. K. Webb.

C.—Mrs. A. Martin.—Miss E. Pascoe.

Class 202.—*For Cornish Students attending an Elementary Day School, in Cornwall, who have passed through the Cornwall Dairy School. On the fourth day of the Show.* [32 entries.]

I. (£1 5s.)—Miss G. Phillips.

II. (£1.)—Miss F. Stephens.

III. (15s.)—Miss B. Simons.

IV. (7s. 6d.)—Miss F. Jarvis.

Equal V. (2s. 6d.)—Miss G. W. Hawkins.

Equal V. (2s. 6d.)—Miss M. Gundry.

R.—Miss M. M. Tremewan.

V.H.C.—Miss R. Burt.—Miss V. O. Osborne.—Miss A. Vercoe.—Miss E. M. Woolcock.

H.C.—Miss F. K. Cawrse.—Miss K. Neal.—Miss D. Spargo.—Miss Ivy Rowe.—Miss E. Exalby.

C.—Miss D. Beaglehole.—Miss I. M. Cowling.—Miss P. A. Crowle.—Miss H. W. Moon.—Miss E. Tredennick.—Miss N. Pyatt.

Class 203.—*For the Wives, Daughters, or Sons of bona fide Cornish Farmers. On the fourth day of the Show.* [50 entries.]

I. (£2.)—Miss D. Bice.

II. (£1.)—Miss K. C. Craze.

III. (15s.)—Miss E. T. Jewell.

IV. (10s.)—Miss L. A. Trerise.

V. (5s.)—Miss H. M. Broad.

R.—Miss H. Le Shirel.

V.H.C.—Miss G. Grove.—Miss J. Heywood.—Miss H. J. Hocking.—Miss D. E. Nicholas.—Miss F. Pascoe.—Miss E. Stephens.—Miss E. Stickland.—Miss G. B. Tuckett.

H.C.—Miss M. Andrew.—Miss S. Cardell.—Miss E. E. Giles.—Miss A. Grove.—Miss D. Hawke.—Miss A. Hocking.—Miss M. B. Hugoe.—Miss L. M. Mitchell.—Mrs. W. H. Mitchell.—Miss G. L. Nelder.—Miss L. Osborne.—Miss B. Osborne.—Miss A. M. Pascoe.—Miss E. Pascoe.—Miss E. Rowe.—Miss D. Salmon.—Miss M. Sansom.—Miss A. M. Thomas.—T. M. Trewhella.—Miss M. H. Lugg.

C.—Miss M. J. Eddy.—Miss L. Huxtable.—Miss G. Jewell.—Miss J. Nankervis.—Miss A. Spargo.—Miss R. F. Ward.—Miss L. K. Webb.

(The Prizes in Class 204 were given by the Proprietors of the "West Briton and Cornish Advertiser.")

Class 204.—*For Farmers' Wives, Daughters, or Sons, on the fourth day of the Show.* [48 entries.]

I. (Silver Tea Service, Value £6.)—Miss D. Salmon.

II. (Silver Rose Bowl, Value £4.)—Miss M. Stickland.

R.—Miss J. L. Prichard.

V.H.C.—Miss D. Bice.—Miss K. C. Craze.—Miss E. E. Giles.—J. Grove.—Miss E. J. Hockley.—Miss M. B. Hugoe.—Miss E. M. James.—Miss R. James.—Miss E. T. Jewell.—S. O. Lawry.—Miss F. Pascoe.—Miss M. Sansom.—Miss A. M. Thomas.—Miss A. Tregea.—T. M. Trewhella.—Miss H. M. Williams.

H.C.—Miss M. J. Eddy.—Miss A. Grove.—Miss G. Grove.—Miss J. James—Mrs. A. Martin.—Mrs. L. R. Mildon.—Miss G. L. Nelder.—Mrs. C. Pantall.—Miss S. A. Perry.—Miss E. Rowe.—Miss H. Soper.—Miss E. Stephens.—Miss L. A. Trerise.—Miss G. B. Tuckett.

C.—Miss H. M. Broad.—Miss M. P. Drew.—Miss E. J. Harris.—Miss M. Lawrence.—Mrs. W. H. Mitchell.—Miss J. Nankervis.—Miss A. Spargo.

CHAMPION CLASSES.

(The Prize in Class 205 was given by the Royal Cornwall Agricultural Association.)

CLASS 205.—*For winners of first and second Prizes in Classes* 196, 198, 200, 202, 203, *or at any previous meeting of the Royal Cornwall Agricultural Association. On the fifth day of the Show.* [8 entries.]

I. (£3.)—MISS D. BICE.

R.—MISS E. T. JEWELL.

V H.C.—G. GROVE.—L. HUXTABLE.

H.C.—MISS L. A. TRERISE.—MISS G. B. TUCKETT.—K. CRAZE.—E. TREGEA.

CLASS 206.—*For winners of First and Second prizes in the Butter-making Classes* 197, 199, 201, *and* 204, *or at any previous meeting of the Society, on the fifth day of the Show.* [14 entries.]

I. (Gold Medal.)—MISS D. BICE.

II. (Silver Medal.)—MISS C. PANTALL.

III. (Bronze Medal.)—MISS H. M. WILLIAMS.

R.—MRS. L. R. MILDON.

V.H.C.—MISS J. JAMES.—MISS R. JAMES.—A. TREGEA.

H.C.—MISS M. A. DALRYMPLE.—MISS E. J. HOCKLEY.—MISS E. M. JAMES.—MISS E. T. JEWELL.

C.—MISS M. STICKLAND.—MISS D. SALMON.—MISS M. STRUGG.

MILKING.

(£3 towards the Prizes in Classes 207, 208 and 209 was given by the Hon. T. C. Agar Roberts, M.P., the Hon. J. R. de C. Boscawen and Sir G. Croydon Marks, M.P.)

CLASS 207.—*For Men* 18 *years of age and over.* [27 entries.]

I.(£1 15s.)—S. O. LAWRY.

II. (£1 5s.)—J. C. HOSKEN.

III. (£1.)—J. W. EDDY.

IV. (15s.)—A. B. DUNSTAN.

R. & V.H.C.—R. SANDERS.

V.H.C.—J. COOMBS.—W. L. HOSKING.—J. C. HOTTEN.—C. J. H. KINGSTON.

C.—J. FRICKER, JUN.—J. GROVE.—T. R. HOSKING.—E. SNELL.—R. C. SPARGO.—A. TAYLOR.—T. M. TREWHELLA.

Class 208.—*For Women* 18 *years of age and over.* [19 entries.]

I. (£1 15s.)—MISS S. CARDELL.

II. (£1 5s.)—MISS G. B. TUCKETT.

III. (£1.)—Miss G. Jewell.

IV. (15s.)—Miss D. E. Nicholas.

V.H.C.—Miss M. Lawrence.—Miss A. M. Thomas.

H.C.—Miss E. M. James.—Miss Rosie Roberts.

C.—Miss M. Andrew.—Mrs. T. G. Arthur.—Mrs. W. J. Bailey.—Mrs. A. Chynoweth.—Mrs. H. E. Eva.—Miss A. Grove.—Miss L. Huxtable.—Miss R. James.

Class 209.—*For Boys and Girls under* 18 *years of age.* [13 entries.]

I. (£1 15s.)—W. Blee.

II. (£1 5s.)—Miss R. F. Ward.

III. (£1.)—W. Tonkin.

IV. (15s.)—E. Cory.

R. & V.H.C.—J. E. Hosking.

H.C.—B. D. Spargo.

C.—Miss K. C. Ball.—B. E. W. Knuckey.—E. T. Spargo.—H. White.

CHAMPION CLASS.

(The 1st Prize in Class 210 was given by the Hon. J. R. de C. Boscawen, and the 2nd Prize by General Sir R. Pole Carew, M.P.).

Class 210.—*For winners of first and second prizes in Classes* 207, 208 and 209. [5 entries.]

I. (£2 2s.)—L. Lawry.

Equal II. (10s.)—Mrs. Ward.

Equal II. (10s.)—Miss Tuckett.

R. & V.H.C.—J. Hosken.

V.H.C.—Miss Cardell.

SHOEING.

Class 211.—*For Nag Horse Shoeing, by Smiths* 25 *years of age and over on the day of the competition, who had not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, at* 10 *a.m., on the second day of the Show.* [15 entries.]

I. (£4.)—E. J. Whitehorn, A.F.C.L.

II. (£3.)—A. Feltham, R.S.S.

III. (£2.)—M. H. Luke.

IV. (£1.)—W. Horton.

R. & V.H.C.—M. Thomas.

V.H.C.—E. C. Yelland.

CLASS 212.—*For Cart Horse Shoeing, by Smiths* 25 *years of age and over on the day of the competition, who had not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, at* 10 *a.m. on the third day of the Show.* [15 entries.]

I. (**£4.**)—H. JONES.

II. (**£3.**)—F. R. WHITEHORN, R.S.S.

III. (**£2.**)—P. PUDDICOMBE.

IV. (**£1.**)—J. FRAYNE, R.S.S.

R. & V.H.C.—J. H. POLLARD.

V.H.C.—T. FELTHAM, A.F.C.L.

H.C.—W. H. MULES.—T. H. RICHARDS.—E. C. YELLAND.

C.—A. FELTHAM, R.S.S.—W. PRICE, A.F.C.L., R.S.S.—T. SQUIRE.—M. THOMAS.—F. TREGANOWAN.—J. YELLAND.

CLASS 213.—*For Shoe Making or Turning, by Smiths under* 25 *years of age on the day of the competition, the patterns and descriptions of the Shoes being supplied by the Judge at* 10 *a.m., on the fourth day of the Show.* [3 entries.]

II. (**£3.**)—C. REES.

III. (**£1.**)—H. RICHARDS.

IV. (**10s.**)—F. PARKIN.

CLASS 214.—*For Shoe Making or Turning, by Smiths* 25 *years of age and over on the day of the competition, the patterns and descriptions of the Shoes being supplied by the Judge at* 12 *noon, on the fourth day of the Show.* [9 entries.]

I. (**£4.**)—E. J. WHITEHORN, A.F.C.L.

II. (**£3.**)—F. R. WHITEHORN, R.S.S.

III. (**£2.**)—H. JONES.

IV. (**£1.**)—E. C. YELLAND.

R. & V.H.C.—E. EVANS, A.F.C.L.

H.C.—M. THOMAS.

POULTRY.

(UNDER POULTRY CLUB RULES.)

(The Birds in Classes 1 to 49 must have been hatched previous to January, 1913.)

CLASS 1.—ANY DISTINCT BREED EXCEPT BANTAMS—COCK AND THREE HENS, BRED IN 1911 OR 1912 (THE PROPERTY OF ONE EXHIBITOR), MATED FOR BREEDING. [15 entries.]

I. **(£3.)**—G. H. PROCTER, *Buff Cochins.*

II. **(£2.)**—M. LINDNER.

III. **(£1.)**—H. NANCARROW, *White Wyandottes.*

R.—W. M. BELL, *Black Orpingtons.*

V.H.C.—J. H. BAKER AND SONS, *Indian Game.*

H.C.—H. LUKE, *Plymouth Rocks.*—H. NANCARROW, *Black Orpingtons.*

C.—A. C. MAJOR, *Dorkings.*

CLASS 2.—COCHIN OR BRAHMA, COCK. [6 entries.]

I. **(£1.)**—G. H. PROCTER.

II. **(15s.)**—MRS. E. CALLAND.

III. **(10s.)**—J. C. TOZER.

R.—S. W. THOMAS.

H.C.—H. L. POPHAM.

CLASS 3.—COCHIN OR BRAHMA, HEN. [2 entries.]

I. **(£1.)**—G. H. PROCTER.

R.—S. W. THOMAS.

CLASS 4.—PLYMOUTH ROCK, COCK. [9 entries.

I. **(£1.)**—H. NANCARROW.

II. **(15s.)**—J. M. CHANDLER.

III. **(10s.)**—J. LANGMAN.

R.—W. H. BREWER.

H.C.—W. H. BREWER.

CLASS 5.—PLYMOUTH ROCK, HEN. [13 entries.]

I. **(£1.)**—W. H. BREWER.
II. **(15s.)**—J. M. CHANDLER.
III. **(10s.)**—J. LANGMAN.
R.—C. B. HILL.
V.H.C.—W. H. BREWER.—H. LUKE.
H.C.—W. H. WILLIAMS.

CLASS 6.—ORPINGTON (BUFF), COCK. [6 entries.]

I. **(£1.)**—P. B. GOVETT.
II. **(15s.)**—J. T. BROWN.
III. **(10s.)**—J. H. BALKWILL.
R.—LEWIS AND JOHN.
V.H.C.—E. WHITE.

CLASS 7.—ORPINGTON (BUFF), HEN. [3 entries.]

I. **(£1.)**—J. M. CHANDLER.
II. **(15s.)**—S. J. STACEY.
R.—S. J. STACEY.

CLASS 8.—ORPINGTON (BLACK), COCK. [7 entries.]

I. **(£1.)**—W. M. BELL.
II. **(15s.)**—A. T. ORGAN AND SON.
III. **(10s.)**—THOMAS BROS.
R.—T. GRIFFITHS.
V.H.C.—W. ELLERY AND SON.
H.C.—T. JAMES.

CLASS 9.—ORPINGTON (BLACK), HEN. [7 entries.]

I. **(£1.)**—THOMAS BROS.
II. **(15s.)**—P. B. GOVETT.
III. **(10s.)**—W. ELLERY AND SON.

CLASS 10.—ORPINGTON (WHITE), COCK. [5 entries.]

I. **(£1.)**—M. LINDNER.
II. **(15s.)**—W. H. EDWARDS.
R.—M. LINDNER.
H.C.—J. S. McCOMB.

CLASS 11.—ORPINGTON (WHITE), HEN. [9 entries.]

I. **(£1.)**—M. LINDNER.
II. **(15s.)**—A. STARLEY.
III. **(10s.)**—W. H. EDWARDS.
R.—T. H. FURNESS.
V.H.C.—M. LINDNER.

CLASS 12.—MINORCA, COCK. [5 entries.]

I. **(£1.)**—E. LOOKER.
III. **(10s.)**—FURSLAND BROS.
R.—A. G. PITTS.
V.H.C.—A. G. PITTS.

CLASS 13.—MINORCA, HEN. [10 entries.]

I. **(£1.)**—FURSLAND BROS.
II. **(15s.)**—T. HAWKINS.
III. **(10s.)**—W. H. RICHARDS.
R.—FURSLAND BROS.
V.H.C.—A. G. PITTS.
H.C.—C. BEWES.

CLASS 14.—RHODE ISLAND (RED), COCK OR HEN. [9 entries.]

I. **(£1.)**—JOHNS BROS.
II. **(15s.)**—D. HARRIS.
III. **(10s.)**—J. PINCH.
R.—W. ROTHWELL, JUN.
V.H.C.—GEORGE BROS.—G. H. JOHNSTONE.—J. PINCH.

CLASS 15.—SUSSEX, COCK. [11 entries.]

I. **(£1.)**—A. J. FALKENSTEIN.
II. **(15s.)**—F. H. WHEELER.
III. **(10s.)**—W. H. EDWARDS.
R.—SANDERSON BROS.
V.H.C.—N. ERMEN.—A. J. FALKENSTEIN.—F. H. WHEELER.
H.C.—N. ERMEN.—LORD ROTHSCHILD.

CLASS 16.—SUSSEX, HEN. [14 entries.]

I. **(£1.)**—W. H. EDWARDS.
II. **(15s.)**—LORD ROTHSCHILD.

III. (10s.)—F. H. Wheeler.

R.—A. J. Falkenstein.

V.H.C.—Mrs. E. Calland.—A. J. Falkenstein—J. R. R. Mitchell.

H.C.—N. Ermen.—Sanderson Bros.—F. H. Wheeler.

Class 17.—DORKING (Any Variety), COCK. [5 entries.]

I. (£1.)—Captain G. Phipps Hornby.

II. (15s.)—W. H. Edwards.

R.—A. C. Major.

V.H.C.—A. C. Major.

H.C.—Northcott and Son.

Class 18.—DORKING (Any Variety), HEN. [5 entries.]

I. (£1.)—Captain G. Phipps-Hornby.

II. (15s.)—W. H. Edwards.

R.—A. C. Major.

V.H.C.—Northcott and Son.

H.C.—A. C. Major.

Class 19.—FAVEROLLES, COCK. [7 entries.]

I. (£1.)—W. H. Edwards.

II. (15s.)—D. Shakesshaft.

III. (10s.)—F. E. Pope.

R.—G. Betts.

V.H.C.—F. Alcock.

H.C.—D. Shakesshaft.

Class 20.—FAVEROLLES, HEN. [4 entries.]

I. (£1.)—F. Thomas.

II. (15s.)—W. H. Edwards.

R.—G. Betts.

Class 21.—LANGSHAN, COCK. [2 entries.]

I. (£1.)—R. Anthony.

R.—R. S. Marsden.

Class 22.—LANGSHAN, HEN. [6 entries.]

I. (£1.)—R. Anthony.

II. (15s.)—R. Anthony.

III. (10s.)—J. R. R. MITCHELL.
R.—R. S. MARSDEN.
V.H.C.—T. FROWEN.

CLASS 23.—WYANDOTTE (SILVER OR GOLD LACED), COCK. [2 entries.]

I. (£1.)—T. H. FURNESS.
R.—S. CLIMAS.

CLASS 24.—WYANDOTTE (SILVER OR GOLD LACED), HEN. (7 entries.]

I. (£1.)—T. H. FURNESS.
II. (15s.)—S. CLIMAS.
III. (10s.)—E. T. CURNOW.
R.—J. BOLT, JUN.
H.C.—T. DONEY.
C.—M. JENNINGS.

CLASS 25.—WYANDOTTE (WHITE), COCK. [12 entries.]

I. (£1.)—T. H. FURNESS.
II. (15s.)—T. DONEY.
III. (10s.)—R. H. JOHN.
R.—G. H. DALRYMPLE.
V.H.C.—LADY FITZGERALD.—H. NANCARROW.
H.C.—H. MANICO.
C.—J. BOLT, JUN.

CLASS 26.—WYANDOTTE (WHITE), HEN. [12 entries.]

I. (£1.)—T. H. FURNESS.
II. (15s.)—H. NANCARROW.
III. (10s.)—LADY FITZGERALD.
R.—T. H. TRICKER.
V.H.C.—G. H. DALRYMPLE.
H.C.—J. BOLT, JUN.—H. GUNN.
C.—MRS. E. CALLAND.—E. J. THORNE, JUN.

CLASS 27.—WYANDOTTE (BLACK), COCK. [5 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—T. H. FURNESS.
III. (10s.)—MISS F. BLINMAN.
R.—W. WILLS.

CLASS 28.—WYANDOTTE (BLACK), HEN. [7 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—T. H. FURNESS.
III. (10s.)—G. WOOD.
R.—G. WOOD.
H.C.—J. ALLSEBROOK.—W. WILLS.
C.—J. TEAGUE.

CLASS 29.—WYANDOTTE (ANY OTHER VARIETY), COCK. [9 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—R. WATSON.
III. (10s.)—T. H. FURNESS.
R.—R. WATSON.
V.H.C.—C. FEAR.—E. WHITE.
H.C.—W. H. BREWER.

CLASS 30.—WYANDOTTE (ANY OTHER VARIETY), HEN. [8 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—T. H. FURNESS.
III. (10s.)—H. GUNN.
R.—J. LIPPIATT.
V.H.C.—W. H. BREWER.
H.C.—R. WATSON.—R. WATSON.
C.—H. BROOM.

CLASS 31.—LEGHORN (WHITE), COCK. [3 entries.]

I. (£1.)—T. REES.
II. (15s.)—W. E. GILLING.
R.—C. BEWES.

CLASS 32.—LEGHORN (WHITE), HEN. [6 entries.]

I. (£1.)—TWENTIETH CENTURY POULTRY FOOD CO.
II. (15s.)—T. H. FURNESS.
III. (10s.)—M. LINDNER.

CLASS 33.—LEGHORN (ANY OTHER VARIETY), COCK. [7 entries.]

I. (£1.)—TWENTIETH CENTURY POULTRY FOOD CO.
II. (15s.)—E. L. SIMON.
III. (10s.)—W. H. FLETCHER.
R.—L. C. VERREY.
V.H.C.—W. E. GILLING.
H.C.—E. L. SIMON.

CLASS 34.—LEGHORN (ANY OTHER VARIETY), HEN. [3 entries.]

I. (£1.)—L. C. VERREY.
II. (15s.)—T. C. HEATH.
R.—F. G. EDWARDS.

CLASS 35.—HAMBURG (BLACK), COCK. [4 entries.]

I. (£1.)—C. E. PICKLES.
II. (15s.)—W. SNELL.
R.—W. SNELL.
V.H.C.—PERKIN AND SONS.

CLASS 36.—HAMBURG (BLACK), HEN. [6 entries.]

I. (£1.)—C. E. PICKLES.
II. (15s.)—W. SNELL.
III. (10s.)—R. P. INSALL.
R.—R. P. INSALL.
H.C.—PERKIN AND SONS.
C.—W. AND J. L. BEVAN.

CLASS 37.—HAMBURG (ANY OTHER VARIETY), COCK. [3 entries.]

I. (£1.)—C. E. PICKLES.
II. (15s.)—W. SNELL.
R.—PERKIN AND SONS.

CLASS 38.—HAMBURG (ANY OTHER VARIETY), HEN. [7 entries.]

I. (£1.)—C. E. PICKLES.
II. (15s.)—H. TURTON.
III. (10s.)—W. H. AVERY.
R.—W. SNELL.
V.H.C.—W. SNELL.
C.—PERKIN AND SONS.

CLASS 39.—OLD ENGLISH GAME (BLACK RED), COCK. [4 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—R. S. MARSDEN.
R.—W. G. KINGWELL.
V.H.C.—J. J. DAVIES.

CLASS 40.—OLD ENGLISH GAME (BLACK RED), HEN. [2 entries.]

I. (£1.)—T. C. HEATH.
R.—R. S. MARSDEN.

Class 41.—OLD ENGLISH GAME (Any Other Variety), COCK. [4 entries.]

I. (£1.)—T. C. Heath.
II. (15s.)—Major C. H. Chichester.
R.—R. S. Marsden.
V.H.C.—W. Carvis, Jun.

Class 42.—OLD ENGLISH GAME (Any Other Variety), HEN. [3 entries.]

I. (£1.)—R. S. Marsden.
II. (15s.)—T. C. Heath.
R.—Major C. H. Chichester.

Class 43.—INDIAN GAME, COCK. [3 entries.]

I. (£1.)—J. H. Baker and Sons.
II. (15s.)—W. Brent.

Class 44.—INDIAN GAME, HEN. [5 entries.]

I. (£1.)—W. Brent.
II. (15s.)—J. H. Baker and Sons.
R.—W. G. Kingwell.
V.H.C.—R. Dockett.
C.—H. H. M. Lawrence.

Class 45.—FRENCH (Excluding Faverolles), COCK. [8 entries.]

I. (£1.)—S. W. Thomas.
II. (15s.)—S. W. Thomas.
III. (10s.)—W. H. Edye, *Houdan.*
R.—W. H. Edye, *Houdan.*
V.H.C.—W. H. Edye, *Houdan.*—G. Henwood, *La Fleech.*
H.C.—G. Henwood, *Créve Cœur.*—F. L. Stone, *Houdan.*

Class 46.—FRENCH (Excluding Faverolles), HEN. [6 entries.]

I. (£1.)—S. W. Thomas.
II. (15s.)—S. W. Thomas.
III. (10s.)—W. H. Edye, *Houdan.*
R.—G. Henwood, *La Fleche.*
V.H.C.—W. H. Edye, *Houdan.*
H.C.—W. H. Edye, *Houdan.*

CLASS 47.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCK. [8 entries.]

I. (**£1.**)—J. H. BAKER AND SONS, *Malay.*

II. (**15s.**)—T. H. FURNESS, *Blue Orpington.*

III. (**10s.**)—R. S. MARSDEN.

R.—R. A. CURZON, *Partridge Wyandotte Bantam.*

V.H.C.—A. E. BROWN, *Blue Orpington.*—J. M. CHANDLER, *Blue Orpington.*—W. H. R. HAWKEN, *Black Spanish.*

H.C.—J ALLSEBROOK, *Redcap.*

CLASS 48.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), HEN. [5 entries.]

I. (**£1.**)—H. NANCARROW, *Ancona.*

II. (**15s.**)—R. S. MARSDEN.

R.—R. A. CURZON, *Bantam.*

V.H.C.—A. E. BROWN, *Blue Orpington.*—T. FAWKES.

CLASS 49.—COCK AND HEN, OF ANY PURE BREED, BEST MATED TO PRODUCE TABLE POULTRY. [6 entries.]

I. (**£1.**)—J. R. R. MITCHELL, *Indian-Dorking.*

II. (**15s.**)—W. H. EDWARDS.

III. (**10s.**)—W. HAMBLY, *Indian Game-Dorking.*

R.—LADY FITZGERALD, *Indian Game-Buff Orpington.*

V.H.C.—P. B. GOVETT.

H.C.—NORTHCOTT AND SON, *Indian Game-Dorking.*

SELLING CLASSES.

CLASS 50.—ANY DISTINCT BREED, COCK OR COCKEREL (PRICE NOT TO EXCEED £1 1s.). [12 entries.]

I. (**£1.**)—J. R. R. MITCHELL, *Hamburg.*

II. (**15s.**)—MRS. E. CALLAND.

III. (**10s.**)—H. NANCARROW.

R.—J. LIPPIATT, *Partridge Wyandotte.*

V.H.C.—J. H. BALKWILL, *Buff Orpington.*—T. DONEY.—W. HAMBLY.—E. J. THORNE, JUN., *White Wyandotte.*

CLASS 51.—ANY DISTINCT BREED, HEN OR PULLET (PRICE NOT TO EXCEED £1 1s.) [10 entries.]

I. (**£1.**)—TWENTIETH CENTURY POULTRY FOOD CO., *White Wyandotte.*

II. (**15s.**)—MRS. E. CALLAND.

III. (**10s.**)—NORTHCOTT AND SON.

V.H.C.—C. JENKIN, *Indian Game.*

H.C.—T. DONEY.—J. R. R. MITCHELL, *Hamburg.*

CHICKENS OF 1913.

CLASS 52.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX OR DORKING, COCKEREL, HATCHED IN 1913. [11 entries.]

I. (£1.)—W. H. BREWER, January 3.

II. (15s.)—A. C. MAJOR, *Dorking*, January 2.

III. (10s.)—F. THOMAS, *White Plymouth Rock*, January 1.

R.—A. J. FALKENSTEIN, *Sussex*, January 2.

V.H.C.—J. T. BROWN, *Buff Orpington*, January 1.—T. WOODS, *White Orpington*, January 3.

H.C.—A. H. BURGE, *Sussex*, January 3.—T. FAWKES, *Light Sussex*, January 13.

CLASS 53.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX OR DORKING, PULLET, HATCHED IN 1913. [16 entries.]

I. (£1.)—J. T. BROWN, *Buff Orpington*, January 1.

II. (15s.)—W. H. BREWER, January 3.

III. (10s.)—A. J. FALKENSTEIN, *Sussex*, January 2.

R.—H. MANICO, *Plymouth Rock*, January 1.

V.H.C.—A. E. BROWN, *Blue Orpington*, January 13.—W. H. EDWARDS, January 3.—NORTHCOTT AND SON, *Dorking*, January 3.

H.C.—E. AND F. BURSILL, *Black Orpington*, January 6.—T. H. FURNESS, *White Orpington*, January 7.—H. NANCARROW, *White Rock*, January 2.

CLASS 54.—MINORCA, WYANDOTTE, LEGHORN, HAMBURG, FAVEROLLES OR FRENCH, COCKEREL, HATCHED IN 1913. [18 entries.]

I. (£1.)—T. DONEY, *White Wyandotte*, January 2.

II. (15s.)—T. H. FURNESS, *White Wyandotte*, January 20.

III. (10s.)—S. CLIMAS, *Golden Wyandotte.*

R.—CAPTAIN G. PHIPPS HORNBY, *Dorking*, January 7.

V.H.C.—H. NANCARROW, *White Wyandotte*, January 4.—R. WILLS, *Golden Wyandotte*, January 3.

H.C.—R. CARNALL, *White Wyandotte*, January 20.—H. MANICO, *White Wyandotte*, January 1.—J. R. R. MITCHELL, *Wyandotte*, January 2.—LORD ROTHSCHILD, *Sussex*.—LORD ROTHSCHILD, *Orpington.*—S. W. THOMAS, *French*, February.

C.—FORD AND SLATER, *White Wyandotte*, January 10.

CLASS 55.—MINORCA, WYANDOTTE, LEGHORN, HAMBURG, FAVEROLLES OR FRENCH, PULLET, HATCHED IN 1913. [17 entries.]

I. (£1.)—T. H. FURNESS, *White Wyandotte*, January 20.

II. (15s.)—T. DONEY, *White Wyandotte*, January 11.

III. (10s.)—H. NANCARROW, *White Wyandotte*, January 8.

R.—S. W. THOMAS, *French*, February.

V.H.C.—W. AND J. L. BEVAN, *Hamburg*, January 2.—T. FAWKES, *Salmon Faverolle*, January 10.—CAPTAIN G. PHIPPS HORNBY, *Dorking*.—J. R. R. MITCHELL, *Hamburg*, January 2.—LORD ROTHSCHILD, *Sussex*.—F. THOMAS *Salmon Faverolle*, January 7.

H.C.—E. AND F. BURSILL, *White Wyandotte*, January 12.—LORD ROTHSCHILD, *Orpington*.

C.—R. CARNALL, *White Wyandotte*, January 20.—J. SAVORY, *Brown Leghorn*, January 4.

CLASS 56.—GAME, MALAY OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCKEREL. [9 entries.]

I. (£1.)—ROBINS AND SON, *Indian Game*, January 8.

II. (15s.)—J. H. BAKER AND SONS, *Indian Game*, January 5.

III. (10s.)—R. S. MARSDEN, *Game*, January 4.

R.—T. TREBILCOCK, *Indian Game*, 1st week in January.

V.H.C.—W. BRENT, *Indian Game*, January.—R. W. CARPENTER, *Indian Game*, January 19.—NORTHCOTT AND SON, *Indian Game*, January 3.

H.C.—E. C. TUCKER, *Indian Game*, middle of January.

CLASS 57.—GAME, MALAY OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), PULLET. [9 entries.]

I. (£1.)—ROBINS AND SON, *Indian Game*, January 8.

II. (15s.)—NORTHCOTT AND SON, *Indian Game*, January 3.

III. (10s.)—R. S. MARSDEN, *Game*, January 4.

R.—T. TREBILCOCK, *Indian Game*, 1st week in January.

V.H.C.—W. BRENT, *Indian Game*, January.—R. W. CARPENTER, *Indian Game*, January 21.—E. C. TUCKER, *Indian Game*, middle of February.

C.—J. H. BAKER AND SONS, *Indian Game*, January 5.

LIVE TABLE POULTRY.

CLASS 58.—PAIR OF COCKERELS OF ANY PURE BREED, HATCHED IN 1913. [11 entries.]

I. (£1.)—J. H. BAKER AND SONS, *Indian Game*, January 5.

II. (15s.)—W. T. MITCHELL, *Plymouth Rock*, January 19.

III. (10s.)—LORD ROTHSCHILD, *Sussex*.

R.—A. C. MAJOR, *Dorkings*, January 2.

V.H.C.—FORD AND SLATER, *White Wyandotte*, January 20.

C.—MRS. L. FURNEY, *Sussex*, January 2.

CLASS 59.—PAIR OF PULLETS OF ANY PURE BREED, HATCHED IN 1913. [9 entries.]

I. (**£1.**)—A. C. MAJOR, *Dorkings*, January 2.
II. (**15s.**)—NORTHCOTT AND SON, January 3.
III. (**10s.**)—J. H. BAKER AND SONS, *Indian Game*, January 5.

CLASS 60.—PAIR OF CROSS-BRED COCKERELS, HATCHED IN 1913. [6 entries.]

I. (**£1.**)—J. CROSS, *Rhode Island Red-Sussex*, January 10.
II. (**15s.**)—LADY FITZGERALD, *Game-Orpington*, January 4.
III. (**10s.**)—F. H. WHEELER, *Game-Sussex.*
R.—W. H. EDWARDS.

CLASS 61.—PAIR OF CROSS-BRED PULLETS, HATCHED IN 1913. [5 entries.]

I. (**£1.**)—W. HAMBLY, *Indian Game-Silver Wyandotte*, January 10.
II. (**15s.**)—W. H. EDWARDS.
R.—LADY FITZGERALD, *Game-Orpington*, January 4.
V.H C.—E. AND F. BURSILL, *Buff Orpington, Indian Game*, January 12.

SPECIAL PRIZES.

Given by the Poultry Club under Conditions stated in Year Book of Club.
Challenge Cups value £10 10s. each.

(*a*).—*For the best Cock or Cockerel in the Poultry Classes, the property of a member of the Poultry Club.* **I.**—G. H. PROCTER.

(*b*).—*For the best Hen or Pullet, ditto, ditto.* **I.**—T. H. FURNESS.

Challenge Cups, value £5 5s. each.

(*c*).—*For the best Orpington, the property of a member of the Poultry Club.* **I.**—J. T. BROWN.

(*d*).—*For the best Wyandotte, ditto, ditto.* **I.**—T. H. FURNESS.

(*e*).—*For the best Leghorn, ditto, ditto.* **I.**—TWENTIETH CENTURY POULTRY FOOD CO.

(*f*).—*For the best Plymouth Rock, ditto, ditto.* **I.**—H. NANCARROW.

(*g*).—*For the best Minorca, ditto, ditto.* **I.**—FURSLAND BROS.

(*h*).—*For the best Langshan, ditto, ditto.* **I.**—R. ANTHONY.

(*i*).—*For the best Sussex, ditto, ditto.* **I.**—A. J. FALKENSTEIN.

A Gold Medal for the best Cock in the Poultry Classes, the property of a member of the Poultry Club. **I.**—G. H. PROCTER.

A Gold Medal for the best Hen, ditto, ditto. **I.**—T. H. FURNESS.

A Gold Medal for the best Cockerel, ditto, ditto. **I.**—ROBINS AND SON.

A Gold Medal for the best Pullet, ditto, ditto. **I.**—J. T. BROWN.

A Silver Challenge Cup, value £10 10s., *for the best Bird exhibited in the Poultry Section, the property of a member of the Poultry Club.* **I.**—G. H. PROCTER.

DUCKS, GEESE AND TURKEYS.

CLASS 62.—DRAKE OR DUCK (AYLESBURY). [4 entries.]

I. (£1.)—A. F. ROWE.
II. (15s.)—MRS. E. CALLAND.
R.—LADY FITZGERALD.
V.H.C.—NORTHCOTT AND SON.

CLASS 63.—DRAKE OR DUCK (ROUEN). [3 entries.]

I. (£1.)—W. G. KINGWELL.
II. (15s.)—R. ANTHONY.
R.—F. WILLIAMS.

CLASS 64.—DRAKE OR DUCK (PEKIN). [2 entries.]

I. (£1.)—R. ANTHONY.
R.—W. F. SNELL.

CLASS 65.—GANDER OR GOOSE. [4 entries.]

I. (£1.)—W. F. SNELL.
II. (15s.)—ABBOTT BROS.
R.—ABBOTT BROS.
V.H.C.—W. F. SNELL.

CLASS 66.—TURKEY, COCK OR HEN. [6 entries.]

I. (£1.)—ABBOTT BROS.
II. (15s.)—LADY FITZGERALD.
III. (10s.)—C. BEWES.
R.—ABBOTT BROS.
V.H.C.—W. F. SNELL.

DEAD TABLE POULTRY

(Forwarded killed and plucked.)

CLASS 67.—PAIR OF COCKERELS OF 1913, OF ANY PURE BREED. [7 entries.]

I. (£1.)—F. H. WHEELER, *Speckled Sussex*, January 16.
II. (15s.)—W. H. EDWARDS.
III. (10s.)—F. H. WHEELER, *Buff Orpington*, January 16.
V.H.C.—MRS. L. FURNEY, *Sussex*, January 2.

CLASS 68.—PAIR OF PULLETS OF 1913 OF ANY PURE BREED. [6 entries.]

I. (£1.)—W. H. EDWARDS.

II. (15s.)—F. H. WHEELER, *Buff Orpington*, January 24.

III. (10s.)—F. H. WHEELER, *Red Sussex*, January 24.

CLASS 69.—PAIR OF CROSS-BRED COCKERELS OF 1913. [9 entries.

I. (£1.)—MRS. I. MERRYWEATHER, *Indian-Buff Orpington.*

II. (15s.)—MRS. L. FURNEY, *Malines-Orpington*, January 5.

III. (10s.)—LADY FITZGERALD, *Game-Orpington*, January 2.

R.—W. H. EDWARDS.

CLASS 70.—PAIR OF CROSS-BRED PULLETS OF 1913. [9 entries.

I. (£1.)—MRS. I. MERRYWEATHER, *Indian-Buff Orpington.*

II. (15s.)—LADY FITZGERALD, *Game-Orpington*, January 2.

III. (10s.)—MRS. L. FURNEY, *Malines-Orpington*, January 5.

R.—F. H. WHEELER, *Sussex-Faverolle*, January 24.

CLASS 71.—PAIR OF DUCKLINGS OF 1913. [3 entries.]

I. (£1.)—MRS. E. JARVIS, March 24.

R.—MRS. H. PAULL, *Aylesbury-Buff Orpington.* February 20.

FORESTRY.

CLASS 1.—FOR A GENERAL COLLECTION OF EXHIBITS ILLUSTRATIVE OF FORESTRY. [7 entries.]

I. (Gold Medal.)—DAME E. F. SMYTH, Ashton Court, Bristol.

II. (Silver Medal.)—MISS EMILY CHARLOTTE TALBOT, Margam Park, Port Talbot.

III. (Bronze Medal.)—THE LORD VIVIAN, Glynn, Bodmin.

V.H.C. and Silver Medal.—LORD CLINTON, Stevenstone, Torrington, North Devon.

H.C.—VISCOUNT FALMOUTH, Tregothnan, Truro.

CLASS 2.—FOR BOARDS OF SCOTS PINE (*Pinus sylvestris*). [6 entries.]

I. (Silver Medal.)—LORD VIVIAN, Glynn, Bodmin.

II. (Bronze Medal.)—DAME E. F. SMYTH, Ashton Court, Bristol.

CLASS 3.—FOR BOARDS OF LARCH (*Larix europea*). [7 entries.]

I. (Silver Medal.)—DAME E. F. SMYTH, Ashton Court, Bristol.

II. (Bronze Medal.)—EARL OF CARNARVON, Highclere Castle, Newbury.

CLASS 4.—FOR BOARDS OF NORWAY SPRUCE (*Picea excelsa*). [3 entries.]

I. (Silver Medal.)—LORD VIVIAN, Glynn, Bodmin.

II. (Bronze Medal.)—DAME E. F. SMYTH, Ashton Court, Bristol.

CLASS 5.—FOR BOARDS OF ASH (*Fraxinus Excelsior*), OAK (*Quercus robur*), AND ELM (*Ulmus Campestris*). [3 entries.]

I. (Silver Medal.)—REV. W. P. BASTARD, "Kitley" and "Buckland Court," Devon.

II. (Bronze Medal.)—VISCOUNT FALMOUTH, Tregothnan, Truro.

CLASS 6.—FOR BOARDS OF THREE NON-CONIFEROUS TIMBERS OTHER THAN THE ABOVE. [2 entries.]

II. (Bronze Medal.)—LORD VIVIAN, Glynn, Bodmin.

CLASS 7.—FOR A 9-FEET FIELD GATE, MANUFACTURED UPON AN ESTATE FROM HOME-GROWN TIMBER, SHOWN IN WORKING ORDER. THE WOOD MUST NOT BE DRESSED WITH A PRESERVATIVE, CREOSOTED OR PAINTED. [3 entries.]

I. (Silver Medal.)—MISS E. C. TALBOT, Margam Park, Port Talbot.

II. (Bronze Medal.)—LORD VIVIAN, Glynn, Bodmin.

CLASS 8.—FOR EXHIBITS ILLUSTRATIVE OF FORESTRY CONTRIBUTED BY INSTITUTIONS OR BY ESTATES NOT DESIROUS OF ENTERING IN COMPETITIVE CLASSES. [5 entries.]

H.C.—NATIONAL FRUIT AND CIDER INSTITUTE, Long Ashton, Bristol.

H.C.—THE DIRECTOR, ROYAL BOTANIC GARDENS, KEW, SURREY.

CLASS 9.—FOR EXAMPLES OF CREOSOTING BY PRESSURE OR ABSORPTION, AND OF OTHER METHODS OF PRESERVATION.

1*st Prize, a Silver Medal; 2nd Prize, a Bronze Medal.*

[NO AWARD.]

[1 entry.]

Bath and West and Southern Counties Society.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

THE Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures. and articles of general utility. A substantially built and completely equipped Working-Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations, and comparative tests of implements and processes are carried on with the assistance of well-known practical and scientific experts, and Butter-making Competitions are held. Among the features of the Annual Meeting are Shoeing, Milking and other Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Art-Manufactures, Nature Study and Forestry.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Luncheons, Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show) at half the Fees payable by Non-Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, lists of Members, reviews of new books on agriculture, &c. (The price of the *Journal* to non-Members is 6s. 4d. post free.)

CHEMICAL AND OTHER FACILITIES.

The Society has a Consulting Chemist, *from whom Members can obtain analyses and reports at reduced rates of charge.* An arrangement has also been made under which Members of the Society can obtain, free of charge, from the National Fruit and Cider Institute at Long Ashton, analyses of cider-apples and perry-pears, and with a view to assisting farmers and others in dealing with insect and other pests which affect agriculture, horticulture, &c., the Council have availed themselves of an offer from the Board of Economic Biology of the University of Bristol, to investigate the nature of any insect or other pest and report upon it free of charge.

EXPERIMENTS.

Experiments on crops are conducted at experimental stations in various parts of the Kingdom, and *Members are enabled to take part in these and to receive reports thereon.*

ART-MANUFACTURES, NATURE STUDY, FORESTRY, &c.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions are held of Art-Manufactures and of work representative of Arts and Handicrafts. Exhibitions are also held illustrating Nature Study, as a branch of Education; the Science of Forestry, &c.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Governors, not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a-year, not less than	10s.

Governors who are eligible for election as President, or Vice-President, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and to the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further Ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only* instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscription for future years by payment, in advance, of £20; and Members by payment, in advance, of £10. Governors and Members who have subscribed for twenty years may become Life Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by

THOS. F. PLOWMAN,

Secretary and Editor,

3, Pierrepont Street, Bath.

Telegraphic Address—"PLOWMAN, BATH."

Telephone No. 610.

Bath and West and Southern Counties Society.

GENERAL LAWS.

As revised in accordance with the Report of a Special Committee; which Report was received and adopted by the Annual General Meeting of Members, held on May 30, 1895.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council, Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects :—

a. To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, arts, manufactures or commerce, as may be determined upon by the Council.

b. To conduct practical and scientific investigations in agriculture.

c. To promote technical education in agriculture by providing means of systematic instruction.

d. To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscription for Members shall be as follows :—

Governors (who are eligible for election as President or Vice-President), not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holdings does not exceed £200 a-year), not less than	10*s.*

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum an Ordinary Member for life ; but any Governor who has subscribed not less than £2 annually for a period of twenty years may become a Life Governor on the further payment of £10 in one sum ; and any Ordinary Member, who has subscribed not less than £1 annually for the same period may become a Life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of Bye-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the Places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on the business of the Society—shall be vested in the Council, who shall report its proceedings at the Annual Meetings of the Society.

VIII. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six elected Members.

ELECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES, AND COUNCIL.

IX. The election of a President for the year, of any additional Vice-Presidents or Trustees, and of the Members of Council representing the Divisions named in Law X., shall take place at the Annual Meeting of the Society, and they shall enter into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

X. The sixty-six Members of the Council referred to in Laws VIII. and IX. shall consist of fifty-eight persons residing or representing property in the following Divisions, viz. :—

Twelve from the Counties of Devon and Cornwall, which shall be called the Western Division ;

Twenty-four from the Counties of Somerset, Dorset, and Wilts, which shall be called the Central Division ;

Twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex, and Kent, which shall be called the Southern Division ; and

Ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of members, and shall form a Division which shall be called the "Without Reference to District" Division.

XI. One-half of the elected Members in each of the five Divisions named in Law X. shall retire annually by rotation, but shall be eligible for re-election.

XII. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the Annual Meeting, and to fill up such vacancies in their own body as are left after the Annual Meeting, or as may from time to time occur during the interval between the Annual Meetings.

XIII. Nominations to offices, election to which is vested in the whole body of Members, must reach the Secretary ten days before the meeting at which such vacancies are to be filled up.

MEETINGS.

XIV. The Annual Meeting of the Society shall take place during the holding of the annual Exhibition.

XV. Special General Meetings of the Society may be convened by the President on the written requisition of not less than three Members of Council; and all Members shall have ten days' notice of the object for which they are called together.

XVI. No Member of less than three months' standing, or whose subscription is in arrear, shall be entitled to vote at a Meeting.

EXHIBITIONS.

XVII. The Annual Exhibitions of the Society shall be held in different Cities or Towns in successive years.

XVIII. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to February 1st, and have paid the subscription for the current year, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be, for the future, excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements and Lists of Officers, Governors, and Members, shall be printed annually in the Society's *Journal*, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No subject or question of a political tendency shall be introduced at any Meeting of this Society.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to or rescinded, except at an Annual or Special General Meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the Meeting at which the question is to be considered.

List of Officers.

1913-1914

SWANSEA MEETING.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT FOR 1913-1914.

SIR J. T. D. LLEWELYN, BART.

TRUSTEES.

*BATH, THE MARQUIS OF, Longleat, Warminster.
ACLAND, SIR C. T. D., BART., Killerton, Exeter.
EDWARDS, C. L. F., The Court, Axbridge, Somerset.

VICE-PRESIDENTS.

ACLAND, SIR C. T. D., Bart.	Killerton, Exeter
ALLEN, J. D.	Springfield House, Shepton Mallet
BADCOCK, H. J.	Broadlands, Taunton
*BATH, MARQUIS OF	Longleat, Warminster
*BEAUFORT, DUKE OF	Badminton, Chippenham
BENYON, J. HERBERT	Englefield House, Reading
*BUTE, THE MARQUIS OF	The Castle, Cardiff
*CLARENDON, EARL OF	The Grove, Watford
*CLINTON, LORD	Heanton Satchville, Dolton, N. Devon
*COVENTRY, EARL OF	Croome Court, Severn Stoke, Worcester
*DARNLEY, EARL OF	Cobham Hall, Kent
DEVONSHIRE, DUKE OF	Chatsworth, Derbyshire
*DIGBY, LORD	Minterne, Cerne Abbas
*DUCIE, EARL OF	Tortworth, Falfield, R.S.O.
EDWARDS, C. L. F.	The Court, Axbridge, Somerset
*FALMOUTH, VISCOUNT	Tregothnan, Truro
FITZHARDINGE, LORD	Cranford, Hounslow
HAMBLEDEN, VISCOUNT	Greenlands, Henley-on-Thames
HOBHOUSE, RIGHT HON. H.	Hadspen House, Castle Cary
*JERSEY, EARL OF	Middleton Park, Bicester, Oxon
*LANSDOWNE, MARQUIS OF, K.G.	Bowood, Calne
MORETON, LORD	Sarsden House, Chipping Norton
*MOUNT-EDGCUMBE, EARL OF	Mount Edgcumbe, Devonport
NEVILLE-GRENVILLE, R.	Butleigh Court, Glastonbury

⁂ Those to whose names an asterisk (*) is prefixed have filled the office of President.

VICE-PRESIDENTS—*continued.*

NORTHUMBERLAND, DUKE OF	Albury Park, Guildford
*PLYMOUTH, EARL OF	Hewell Grange, Bromsgrove
*PORTMAN, VISCOUNT	Bryanston, Blandford
*RADNOR, EARL OF	Longford Castle, Salisbury
SHELLEY, SIR J., Bart.	Shobrooke Park, Crediton
SOMERSET, DUKE OF	Maiden Bradley, Bath
STRACHIE, LORD	Sutton Court, Pensford, Somerset
WALRRAN, LORD	Bradfield, Cullompton

THE LORD WARDEN OF THE STANNARIES.

THE SECRETARY AND KEEPER OF THE RECORDS OF THE DUCHY OF CORNWALL.

THE RECEIVER-GENERAL OF THE DUCHY OF CORNWALL.

⁂ Those to whose names an asterisk (*) is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

The Patron.
The President.
The Vice-Presidents.
The Trustees.
The Treasurer.

ELECTED MEMBERS.

WESTERN DIVISION (Devon and Cornwall).

(12 *Representatives.*)

Elected in 1912.

Name.	*Address.*
Buckingham, Rev. Preb.	The Rectory, Doddiscombsleigh, Exeter
Devon, Earl of	Powderham Castle, Devon
Gibbs, A. H.	Pytte, Clyst St. George, Topsham, Devon
Moore-Stevens, Col. R. A.	Winscott, Torrington, Devon
Smyth Osbourne, J. S.	Ash, Iddesleigh, Devon
Studdy, T. E.	Mazonet, Stoke Gabriel, Totnes

Elected in 1913.

Name.	*Address.*
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall
Daw, J. E.	Exeter
Leverton, W.	Woolleigh Barton, Beaford, N. Devon
Lopes, Sir Henry Y. B., Bart.	Maristow, Roborough, S. Devon
Martyn G.	Liskeard, Cornwall
Sillifant, A. O.	Culm Leigh, Stoke Canon, Exeter

CENTRAL DIVISION (Somerset, Dorset, and Wilts).

(24 *Representatives.*)

Coles, Cary	Manor House, Winterbourne Stoke, Salisbury
Gibson, J. T.	Claverham, Yatton
Llewellyn, Col. E. H.	The Court Farm, Langford, Bristol
Maule, M. St. J.	Chapel House, Bath
Miles, Sir H., Bart.	Abbotsleigh, Bristol
Napier, H. B.	Long Ashton, Clifton, Bristol
Parry-Okeden, Lt.-Col. U. E. P.	Turnworth, Blandford, Dorset
Sanders, R. A., M.P.	Barwick House, Yeovil
Sherston, Major C. D.	Evercreech, Bath
Skrine, Col. H. M.	Warleigh Manor, Bath
Tudway, C. C.	The Cedars, Wells, Somt.
Wynford, Lord	Warmwell, Dorchester

Clark, W. H.	Rutland Cottage, Combe Down, Bath
Farwell, E. W.	11, Laura Place, Bath
Gibbons, G.	Tunley Farm, near Bath
Gordon, G. H.	The Barn House, Sherborne, Dorset
Hill, V. T.	Mendip Lodge, Langford, Bristol
Hoare, Sir H. H. A., Bart.	Stourhead, Zeals, S.O., Wilts
Hurle, J. C.,	Brislington Hill, Bristol
Knight, S. J.	Walnut Farm, East Dundry, Bristol
Rawlence, E. A.	Newlands, Salisbury
Somerville, A. F.	Dinder House, Wells
White, A. R.	Charnage, Mere, Wilts

SOUTHERN DIVISION (Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex and Kent).

(12 *Representatives.*)

Best, Capt. T. G.	East Carleton Manor, Norwich
Byng, Col. Hon. C.	Deerhurst Lyndhurst, Hants
Jervoise, F. H. T.	Herriard Park, Basingstoke
Latham, T.	Dorchester, Oxon
Rutherford, J. A.	Highclere Estate Office, Newbury

Ashcroft, W.	13, The Waldrons, Croydon
Cobb, H. M.	Higham, Kent
Cundall, H. M., I.S.O., F.S.A.	4, Marchmont Gardens, Richmond, Surrey
Drummond, H. W.	3, Bryanston Square, London, W.
Llewellyn, L. T. E.	Hackwood, Basingstoke

NORTH-WESTERN DIVISION (Worcestershire, Gloucestershire, Herefordshire, Monmouthshire and Wales).

(10 *Representatives.*)

Best, Capt. W.	Vivod, Llangollen
Chester Master, Col. T. W.	Knole Park, Almondsbury
Cotterell, Sir J., Bart.	Garnons, Hereford
Lipscomb, G.	Margam Park Estate Office, Port Talbot
Mason, F. F.	Swansea

Alexander, D.	Cardiff
Alexander, H. G.	5, High Street, Cardiff
Baker, G. E. Lloyd	Hardwicke Court, Gloucester
Bathurst, C., M.P.	Lydney Park, Gloucester
Drummond, Col. F. D. W.	Cawdor Estate Office, Carmarthen

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 *Representatives.*)

Allsebrook, A	Link Elm, Malvern Link
Knollys, C. R.	Weekley, Kettering
Nichols, G.	49, Broad Street, Bristol
Storrar, J. I.	Grittleton, Chippenham

Ackers, C. P.	Huntley Manor, Gloucester
Evans, H. M. G.	Plassissa, Llangennech, Carmarthen
Lee, Maj.-Gen. H. H.	The Mount, Dinas Powis, Cardiff
Williams, Jestyn	Llanover Estate, Newport, Mon.

STANDING COMMITTEES, 1913-1914

[The President is *ex-officio* Member of all Committees.]

ALLOTMENT.

Edwards, C. L. F., *Chairman.*

Bath, Marquis of
Best, Capt. W.
Byng, Col. Hon. C.
Gibbons, G.
Napier, H. B.
Studdy, T. E.
Wynford, Lord

CONTRACTS.

Napier, H. B., *Chairman.*

Bath, Marquis of
Best, Capt. W.
Daw, J. E.
Edwards, C. L. F.
Mason, F. F.
Miles, Sir H., Bart.
Neville-Grenville, R.
Studdy, T. E.

DAIRY

Acland, Sir C. T. D., Bart., *Chairman.*

Somerville, A. F., *Vice-Chairman.*

Allen, J. D.
Ashcroft, W.
Boscawen, Rev. A. T.
Clark, W. H.
Gibbons, G.
Gibson, J. T.
Hurle, J. Cooke
Knollys, C. R.
Latham, T.
Llewellyn, Col. E. H.
Llewellyn, L. T. E.
Napier, H. B.
Neville-Grenville, R.
Strachie Lord
Tudway, C. C.

DISQUALIFYING.

The Stewards of Live Stock and Produce.

EXPERIMENTS AND EDUCATION.

Acland, Sir C. T. D., Bart., *Chairman.*

Allen, J. D.
Ashcroft, W.
Baker, G. E. Lloyd
Bathurst, C., M.P.
Benyon, J. H.
Gibbons, G.
Gibson, J. T.
Hobhouse, Rt. Hon. H.
Hurle, J. Cooke
Knollys, C. R.
Latham, T.
Neville-Grenville, R.
Rawlence, E. A.
Rutherford, J. A.
Smyth-Osbourne, J. S.
Somerville, A. F.

(With power to add to their number.)

FINANCE.

Napier, H. B., *Chairman.*

Daw, J. E.
Gibbs, A. H.
Llewellyn, Col. E. H.
Miles, Sir H., Bart.

FORESTRY.

Lipscomb, G., *Chairman.*

Ackers, C. P.
Acland, Sir C. T. D., Bart.
Clinton, Lord
Drummond, Col. F. D. W.
Evans, H. M. G.
Napier, H. B.
North, G. F.
Rutherford, J. A.

IMPLEMENT REGULATIONS.

Shelley, Sir J., Bart., *Chairman.*

Acland, Sir C. T. D., Bart.
Bath, Marquis of
Best, Capt. W.
Edwards, C. L. F.
Gibbons, G.
Moore-Stevens, Col. R. A.
Napier, H. B.
Neville-Grenville, R.
Studdy, T. E.

JOURNAL.

Acland, Sir C. T. D., Bart., *Chairman.*

Baker, G. E. Lloyd
Bathurst C., M.P.
Hobhouse, Right Hon. H.

JUDGES' SELECTION.

Sillifant, A. O., *Chairman.*

Alexander, D.
Allen, J. D.
Ashcroft, W.
Byng, Col. Hon. C.
Gibbons, G.
Hoare Sir H. H. A., Bart.
Latham, T.
Master, Col. T. W. C.
Moore-Stevens, Col. R. A.
Parry-Okeden, Lieut.-Col. U. E. P.
Shelley, Sir J., Bart.
Wynford, Lord

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

Alexander, D.
Coventry, Earl of
Drummond, H. W.
Llewellyn, Col. E. H.
Mason, F. F.
Shelley Sir J., Bart.

(With power to add to their number.)

SCIENCE AND ART.

Bath, Marquis of, *Chairman.*

Acland, Sir C. T. D., Bart.
Cundall, H. M. (I.S.O., F.S.A.)
Daw, J. E.
Evans, H. M. G.
Farwell, E. W.
Hobhouse, Rt. Hon. H.
Legard, A. G.
Lipscomb, G.
Llewelyn, Sir J. T. D., Bart.
Napier, H. B.
Rutherford, J. A.

(With power to add to their number.)

SELECTION.

The Chairmen of all other Committees.

SHOW PLACE AND DATE.

Chairmen of the Allotment, Contracts, Dairy, Finance, Forestry, Implement Regulations, Railway Arrangements, Science and Art, and Stock Prize Sheet Committees.

(With power to add two Local Members to their number.)

STOCK PRIZE SHEET.

Sillifant, A. O., *Chairman.*

Alexander, D.
Alexander, H. G.
Allen, J. D.
Allsebrook, A.
Ashcroft, W.
Buckingham, Rev. Preb.
Byng, Col. Hon. C.
Clark, W. H.
Coles, C.
Cotterell, Sir J., Bart.
Evans, H. M. G.
Gibbons, G.
Hoare, Sir H. H. A., Bart.
Latham, T.
Leverton, W.
Miles, Sir H., Bart.
Moore-Stevens, Col. R. A.
Shelley, Sir J., Bart.
White A. R.
Wynford, Lord

WORKS.

Edwards, C. L. F., *Chairman.*

Bath, Marquis of
Best, Capt. W.
Napier, H. B.
Studdy, T. E.

Stewards.

Cattle, Sheep and Pigs.

Byng, Col. Hon. C.
Ashcroft, W.
Moore-Stevens, Col. R. A.

Cider.

Farwell, E. W.

Dairy.

Gibbons, G.
Somerville, A. F.

Experiments.

Ashcroft, W.

Finance.

Napier, H. B.
Gibbs, A. H.
Llewellyn, Col. E. H.

Forestry.

Lipscomb, G.

Horses.

Alexander, D.
Wynford, Lord

Horticulture.

Boscawen, Rev. A. T.

Music.

Cundall, H. M. (I.S.O., F.S.A.)

Poultry.

Studdy, T. E.

Science and Art.

Cundall, H. M. (I.S.O., F.S.A.)

Shoeing.

Latham, T.

Yard.

Edwards, C. L. F.
Best, Capt. W.
Bath, Marquis of
Studdy, T. E.

Other Honorary Officials.

Treasurer—Luttrell, C. M. F.

Chaplain.

Boscawen, Rev. A. T.

Permanent Officials.

Secretary and Editor—Plowman, Thomas F.

Associate Editor.

Lloyd, F. J. (F.C.S.)

Auditor.

Goodman, F. C. (*Chartered Accountant*)

Consulting Chemist.

Voelcker, Dr. J. A. (M.A., F.I.C.)

Veterinary Inspector.

Penberthy, Prof. J. (F.R.C.V.S.)

Superintendent of Works:

Ayre, H. C.

Annual Exhibitions.

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution.	President.	Admissions.		
			Local Committee.	Local Societies.	Local Residents.			On 2/6 Days.	On 1/- Days.	Total.
		£	£	£	£	£				
1852	Taunton	210	..	..	..	210	Lord Portman	..	..	..
1853	Plymouth	450	..	..	..	450	Sir T. D. Acland, Bart.	..	..	..
1854	Bath	450	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton	450	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil	450	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot	700	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff	800	..	..	..	800	Lord Courtenay	..	..	..
1859	Barnstaple	800	85	..	81	966	John Sillifant	..	..	..
1860	Dorchester	900	..	..	..	900	Lord Rivers	10,709	11,949	22,658
1861	Truro	900	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells	900	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter	900	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol	1000	106	..	50	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford	900	358	..	..	1258	Lord Taunton	16,575	35,261	51,836
1866	Salisbury	900	57	..	..	957	Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury	..					J. Tremayne	7,502	16,702	24,204
1868	Falmouth	900	..	..	..	900	Sir J. T. B. Duckworth, Bart.	11,393	19,495	30,888
1869	Southampton	900	132	..	18	1050	Earl of Carnarvon	15,340	41,290	56,630
1870	Taunton	900	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,952	33,653	51,605
1871	Guildford	900	110	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester	800	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth	800	..	400	..	1200	Earl of Mount-Edgcumbe	16,665	45,744	62,409
1874	Bristol	800	403	..	..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120
1875	Croydon	800	245	..	..	1045	R. Benyon, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	1181	Earl of Ducie	16,396	32,645	49,041
1877	Bath	800	215	..	..	1015	Marquis of Lansdowne	27,625	48,852	76,477
1878	Oxford	800	..	170	6	976	Earl of Jersey	12,414	26,995	39,409
1879	Exeter	800	..	..	10	810	Earl of Morley	14,634	40,533	55,167
1880	Worcester	800	..	254	..	1054	Earl of Coventry	8,415	37,675	46,090
1881	Tunbridge Wells	800	245	34	..	1079	Marquis of Abergavenny	13,368	33,236	46,604
1882	Cardiff	800	200	198	17	1215	Lord Tredegar	23,941	38,680	62,621
1883	Bridgwater	800	78	..	..	878	Lord Brooke, M.P.	17,171	31,241	48,412

Annual Exhibitions—*continued.*

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution.	President.	Admissions.			
			Local Committee.	Local Societies	Local Residents.			On 5/- Day.	On 2/6 Days.	On 1/- Days.	Total.
		£	£.	£	£	£					
1884	Maidstone .	800	310	33	75	1218	Viscount Holmesdale . .	..	13,501	31,053	44,554
1885	Brighton .	800	227	33	82	1142	Viscount Hampden . .	..	9,637	39,851	49,488
1886	Bristol . .	800	525	..	..	1325	Lord Carlingford . .	..	29,580	70,999	100,579
1887	Dorchester .	800	..	112	..	912	Earl of Ilchester . . .	..	8,860	29,846	38,706
1888	Newport (Mon.)	800	100	..	..	900	Lord Tredegar . . .	..	14,878	38,567	53,445
1889	Exeter . .	800	..	..	10	810	Lord Clinton	..	16,405	36,195	52,600
1890	Rochester .	800	294	..	26	1120	Earl of Darnley . . .	..	3,480	48,314	51,794
1891	Bath . .	800	50	103	100	1053	Earl Temple	..	23,510	52,185	75,695
1892	Swansea . .	800	200	100	10	1110	Sir J. D. T. Llewelyn, Bart. .	..	18,364	54,609	72,973
1893	Gloucester .	800	400	..	..	1200	Lord Fitzhardinge . . .	..	14,272	40,368	54,640
1894	Guildford .	800	174	..	10	934	Earl of Onslow . . .	..	8,671	29,813	38,484
1895	Taunton . .	800	85	160	10	1055	Viscount Portman . . .	..	13,181	30,111	43,292
1896	St. Albans .	800	152	..	..	952	Earl of Clarendon . . .	..	12,056	22,380	34,436
1897	Southampton .	800	50	..	..	850	Lord Montagu of Beaulieu .	..	8,284	33,750	42,034
1898	Cardiff . .	800	200	..	..	1000	Lord Windsor . . .	..	13,101	42,501	55,602
1899	Exeter . .	800	..	225	5	1030	Lord Clinton	..	16,091	39,832	55,923
1900	Bath . .	800	100	150	10	1060	Marquis of Bath . . .	954	11,601	36,814	49,369
1901	Croydon . .	800	115	..	..	915	H.R.H. The Duke of Cornwall and York, K.G. . .	1,196	9,362	30,693	41,251
1902	Plymouth .	800	105	100	36	1041	Earl of Morley . . .	842	12,629	40,565	54,036
1903	Bristol . .	800	434	50	61	1345	Duke of Beaufort . . .	..	34,528	74,352	108,880
1904	Swansea . .	800	350	..	..	1150	Lord Windsor . . .	..	28,265	50,562	78,827
1905	Nottingham .	800	..	218	..	1018	Duke of Portland, K.G. . .	..	8,913	45,964	54,877
1906	Swindon .	800	..	200	50	1050	Earl of Radnor . . .	..	7,838	42,013	49,851
1907	Newport (Mon.)	800	201	51	29	1081	H.R.H. The Prince of Wales, K.G.	..	16,236	37,819	54,055
1908	Dorchester .	800	100	25	..	925	Lord Digby . . .	..	12,227	20,350	32,577
1909	Exeter . .	800	..	100	..	900	Lord Clinton	..	14,898	41,891	56,789
1910	Rochester and Chatham .	800	117			917	Earl of Darnley . . .	..	5,892	20,105	25,997
1911	Cardiff . .	800	195	110	10	1115	Marquis of Bute . . .	..	16,213	40,588	56,801
1912	Bath . .	800	100	100	..	1000	Marquis of Bath . . .	..	13,843	40,935	54,788
1913	Truro .	800	35	115	39	918	Viscount Falmouth . .	..	12,918	44,700	57,618
1914	Swansea .	800	301	..	..	1101	Sir J. T. D. Llewelyn, Bart.	..	..	..	..

Members' Privileges.

ANALYSES OF FERTILISERS, FEEDING STUFFS, WATERS, SOILS, &c.

Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis).

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested in applying for Analyses, to state that they do so as Members of the first-named Society.

THE following are the rates of Charges for Chemical Analyses to Members of the Society.

These privileges are applicable only when the analyses are for *bona-fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom

The analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

Land or estate agents, bailiffs, and others, when forwarding samples are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

No.		
1.	—An opinion of the purity of bone-dust or oil-cake (each sample)	2*s.* 6*d.*
2.	—An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	5*s.*
3.	—An analysis of guano, showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	10*s.*
4.	—An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged	5*s.*
5.	—An analysis of superphosphate of lime, dissolved bones, &c., showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime, and ammonia, together with an opinion as to whether it be worth the price charged	10*s.*
6.	—An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged	10*s.*
7.	—An analysis of compound artificial manures, animal products, refuse substances used for manure, &c.	from 10*s.* to £1
8.	—An analysis of limestone, showing the proportion of lime	7*s.* 6*d.*
9.	—An analysis of limestone, showing the proportion of lime and magnesia ..	10*s.*
10.	—An analysis of limestone or marls, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	10*s.*
11.	—Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	£1
12.	—Complete analysis of a soil	£3
13.	—An analysis of oil-cake or other substance used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre as well as of starch, gum, and sugar in the aggregate ; and an opinion of its feeding and fattening or milk-producing properties..	10*s.*
14.	—Analysis of any vegetable product	10*s.*
15.	—Determination of the "hardness" of a sample of water before and after boiling	5*s.*
16.	—Analysis of water of land-drainage, and of water used for irrigation	£1
17.	—Analysis of water used for domestic purposes	£1 10*s.*
18.	—An analysis of milk (to assist Members in the management of their Dairies and Herds, *bona-fide* for their own information and not for trade purposes, nor for use in connection with the Sale of Food and Drugs Acts)	5*s.*
19.	—Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	5*s*
20.	—Consultation by letter	5*s*
21.	—Consultation necessitating the writing of three or more letters	10*s*

Members wishing to exercise their privileges on the above-named terms, should forward their samples for examination *by post or parcel prepaid,* to the Consulting Chemist, DR. JOHN AUGUSTUS VOELCKER, M.A., F.I.C., Stuart House, 1, Tudor Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILISERS AND FEEDING STUFFS.

Purchasers are recommended in every case to insist upon having an *Invoice* given to them. This invoice should set out clearly :—

In the case of **Fertilisers**—
(1.) the **name** of the fertiliser ;
(2.) whether the fertiliser be artificially **compounded** or not ;
(3.) the **analysis** guaranteed in respect of the principal fertilising ingredients.

In the case of **Feeding-Stuffs**—
(1.) the **name** of the article :
(2.) the **description** of the article ; whether it has been made from one substance or seed only, or from more than one.
(3.) the **analysis** guaranteed in respect of Oil and Albuminoids.

(NOTE.—The use of the terms "Linseed-cake," "Cotton-cake," &c., implies that these cakes shall be "pure," and purchasers are recommended to insist upon these terms being used without any qualification such as "95 per cent.," "as imported," &c. "Oil-cake" should be avoided.

Members of the Society should see that the **Invoices** agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantees set out in the following list, and that they be sold **subject to the analysis and report of the Consulting Chemist of the Bath and West and Southern Counties Society.**

FERTILISERS.

Raw Bones, Bone-meal, or **Bone-dust** to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "**Degelatinised**" **Bones** to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid, and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed to be "PURE," and to contain 95 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent of Sulphate of Potash.

All fertilisers to be delivered in good and suitable condition for sowing.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, i.e., prepared *only* from one kind of seed from which their name is derived, and to be in sound condition. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the " purity " or otherwise of any feeding-stuffs. The percentages of Oil and Albuminoids must also be guaranteed.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis.

All Feeding-Stuffs to be sold in sound condition, and to contain nothing of an injurious nature or worthless for feeding purposes.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

1.—A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.

2.—The sample should reach the Analyst *in the same condition* as it was at the time when drawn.

FERTILISERS.

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from ½ lb. to 1 lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken three strips should be broken off right across the cake and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed, and three samples of about 1 lb. each should be taken and put in tins or bags duly marked, fastened, and sealed as before. One of these lots should be sent for anaylsis, the remaining two being kept for reference. It is advisable, also, with the broken pieces, to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half-a-dozen different bags of the delivery; these lots should then be well mixed, and three ½ lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made, 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up gently, turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil and forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles holding half a gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and feeding-stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding-stuff is given to stock.

Procedure in the event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding-stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case, three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled and *sealed* by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

All samples intended for the Consulting Chemist of the Society should be addressed (postage or carriage prepaid) to Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., Stuart House, 1, Tudor Street, New Bridge Street, London, E.C. Separate letters of instruction should be sent at the same time.

LIST OF JUDGES—SWANSEA, 1914.

HORSES.

Agricultural.—R. H. Keene, Westfield, Medmenham, Marlow.
Hunters.—Owen C. Wallis, West Haddon Hall, Rugby.
Colliery.—R. H. Keene, Westfield, Medmenham, Marlow.
Hackneys.—A. Rowell, West Rudham, King's Lynn.
Ponies.—R. W. Fox, Grimstone, Horrabridge, Devon.
Harness.—A. Rowell, West Rudham, King's Lynn.
Jumping.—R. H. Harries, M.F.H., The Croft, St. Clears, South Wales.

CATTLE.

Devon.—W. J. Chick, Stratton, Dorchester.
South Devon.—J. M. Peeke, Hemaford, Harbertonford, Totnes.
Shorthorn.—R. W. Hobbs, Kelmscott, Lechlade.
Hereford.—A. P. Turner, Fayre Oaks, Hereford.
Sussex.—P. Chasemore, Ashleigh, Horsham, Sussex.
Welsh Black.—J. W. Harries, Pilrhoth, Llanstephan Road, Carmarthen.
Aberdeen-Angus.—Rev. C. Bolden, Preston Bissett, Buckingham.
Jersey Bulls.—C. C. Tudway, The Cedars, Wells, Somerset.
Jersey Cows and Heifers.—H. Padwick, Manor House, Thorney, Emsworth.
Guernsey.—D. Michie, Tichborne Park Estate Office, Alresford, Hants.
Kerry and Dexter.—H. D. Betteridge, Drayton, 301, Woodstock Road, Oxford.

SHEEP.

Devon Longwoolled.—C. L. Hancock, The Manor Farm, Cothelstone, Taunton.
South Devon.—E. B. Luscombe, Court Farm, Woodleigh, Loddiswell.
Kent or Romney Marsh.—H. J. Chittenden, St. Mary's, New Romney.
Southdown.—H. C. Webb, Castle Office, Home Farm, Chirk, North Wales.
Hampshire Down.—E. J. Bennett, Chilmark, Salisbury.
Oxford Down.—W. A. Treweeke, The Mount, Churchill, Chipping Norton.
Dorset Down.—J. Spicer, Bovington, Wool, Wareham.
Dorset Horn.—F. Hounsell, North Farm, Winterborne, Kingston, near Blandford, Dorset.
Exmoor Horn.—T. W. Burnell, Stichpool, North Molton, Devon.
Welsh Mountain.—W. S. Miller, Forest Lodge, Brecon.
Ryeland.—D. V. Price, 68, Bouverie Road West, Folkestone, Kent.
Kerry.—W. S. Miller, Forest Lodge, Brecon.

PIGS.

Berkshire.—T. Chettle, Manor Farm, Reading.
Large Black.—J. Warne, Treveglos, St. Mabyn, S.O., Cornwall.
Large and Middle White and Tamworth.—A. S. Gibson, Coldham House, Friday Bridge, Wisbech.

POULTRY.

W. H. Cook, Orpington, Kent; and T. C. Heath, Keele, Newcastle, Staffs.

PRODUCE.

Cider.—J. Bennett, Down House, Dursley.
Cheese.—H. M. J. Underhill, 7, High Street, Oxford.
Cream Cheese, Butter and Cream.—Prof. T. Carroll, 1, Rostrevor Terrace, Rathgar, Dublin.

COMPETITIONS.

Butter-Making.—Prof. T. Carroll, 1, Rostrevor Terrace, Rathgar, Dublin; and Miles Benson, British Dairy Institute, Reading.
Milking.—W. J. H. Porter, Glendale, Wedmore, Somerset.
Shoeing.—F. Bazley, M.R.C.V.S., 5, Estcourt Street, Devizes, Wilts.
Timbering and Splicing.—A. G. Brown, Cambrian Collieries (Ltd.), Clydach Vale, Glam.; and D. F. Davies, New Cross Hands Collieries (Ltd.), Cross Hands, Llannon, S.O., Carm.

FORESTRY.

G. Marshall, Estate Office, Godalming.

MONEY PRIZES.

	£	s.	d.	PAGE
HORSES	£1,000	13	6	cv
CATTLE	1,188	0	0	cxiii
SHEEP	569	0	0	cxix
PIGS	217	0	0	cxxi
CIDER	30	0	0	cxxii
CHEESE	81	10	0	cxxii
CREAM CHEESE, BUTTER AND CREAM	74	10	0	cxxii
BUTTER-MAKING	53	10	0	cxxiii
MILKING	11	5	0	cxxiii
SHOEING	44	10	0	cxxiv
TIMBERING AND SPLICING	14	0	0	cxxiv
POULTRY	163	10	0	cxxxv
	£3,447	8	6	

DONORS OF MONEY PRIZES.

	£	s.	d.
Bath and West and Southern Counties Society	£2,847	5	0
Swansea Local Committee	301	11	6
Glamorgan County Council	35	10	0
Shire Horse Society (or Medal)	15	0	0
F. F. Mason, Esq.	2	2	0
Devon Cattle Breeders' Society	10	0	0
Shorthorn Society	20	0	0
Dairy Shorthorn (Coates's Herd Book) Association	10	0	0
Hereford Herd Book Society	20	0	0
Welsh Black Cattle Society	20	0	0
English Aberdeen-Angus Cattle Association	10	0	0
English Jersey Cattle Society (or Medal)	20	0	0
English Guernsey Cattle Society	10	0	0
English Kerry and Dexter Cattle Society	15	0	0
Kent or Romney Marsh Sheep Breeders' Association	17	0	0
Southdown Sheep Society	17	0	0
Hampshire Down Sheep Breeders' Association	10	0	0
Oxford Down Sheep Breeders' Association	10	0	0
Dorset Horn Sheep Breeders' Association	15	0	0
Dorset Down Sheep Breeders' Association	15	0	0
Exmoor Horn Sheep Breeders' Society	10	0	0
British Berkshire Society	5	0	0
Large Black Pig Society	12	0	0
	£3,447	8	6

DONORS OF MEDALS, PLATE, &c.

Shire Horse Society.
Sir J. T. D. Llewelyn, Bart.
David Davies, Esq., M.P.
Hunters' Improvement and National Light Horse Breeding Society.
Hackney Horse Society.
National Pony Society.
Swansea Local Committee.
Chas. A. Hanson, Esq.
Shorthorn Society
Sussex Herd Book Society.
Aberdeen Angus Cattle Society.
English Aberdeen Angus Cattle Association.
English Jersey Cattle Society.
B. de Bertodano, Esq.
English Kerry and Dexter Cattle Society.
Southdown Sheep Society.
Poultry Club.
Bath and West Society.

PRIZES

	First Prize.	Second Prize.	Thrd Prize
An Animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of those Prizes headed as Champion or Special Prizes.	£	£	£

HORSES.

Exhibitors are requested to note that Animals entered in Classes 1 to 8 must be in the Yard before 8 a.m. on Thursday, May 28th, and (except the Stallions in Classes 1 and 2 which can be removed after the Parade of Horses on the third day of the Show) must remain in the Yard till 6 o'clock on Tuesday, June 2nd.

SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book.)

Class			
1.—Stallion, foaled before 1912 . . .	15	10	3
2.—Stallion, foaled in 1912	15	10	3
3.—Colt, foaled in 1913	15	10	3
4.—Mare in-Foal, or with foal at foot . .	15	10	3
5.—Filly or Gelding, foaled in 1913 . . .	10	5	3
6.—Filly or Gelding, foaled in 1912 . . .	10	5	3
7.—Filly or Gelding, foaled in 1911 . . .	10	5	3

	First Prize.	Second Prize.	Thrd Prize
HORSES—*continued.*	£	£	£
MEDAL.			
(Offered by the Shire Horse Society).			
A Gold Medal, or the sum of £10, for the Best Mare or Filly in the Shire Horse Classes, under Condition 48, and to the Breeder of the winner under the Conditions stated, a prize of	**10** **5**		
SPECIAL PRIZES.			
(Offered by the Swansea Local Committee.)			
A.—*Best Local Exhibit in Class 1	**5**		
B.—*Best Local Exhibit in Class 2 or 3 . . .	**5**		
C.—*Best Local Exhibit in Class 4 . . .	**5**		
D.—*Best Local Exhibit in Class 5	**5**		
E.—*Best Local Exhibit in Class 6	**5**		
F.—*Best Local Exhibit in Class 7	**5**		
CLASS **ANY AGRICULTURAL BREED.**			
8.—Mare or Gelding, suitable for general work. Offered by the Swansea Local Committee, and open only to Residents within a radius of 20 miles of Swansea Post Office	**5**	**2**	**1**
SPECIAL PRIZE.			
G.—The Swansea Horse Show Society's Silver Cup. Presented by Sir John T. D. Llewelyn, Bart., will be awarded to the First Prize Winner in this Class, under the following conditions :—			
The Cup to be won three times before becoming the property of the holder.			
The winner will be required to find two guarantors, approved by the Committee, for the safe return of the Cup to the Secretary of the Swansea Horse Show 28 days before that Society's Show in 1915.			
COLLIERY.			
Animals entered in Classes 9 and 10 must be in the Yard before 9 a.m. on Thursday, May 28th, and can leave the Yard with the consent of the Stewards after they have been judged.			
***9.—Mare, in-foal, or with Foal at foot, not exceeding 15.1 hands . . . .**	**4**	**2**	**1**
***10.—Filly or Colt, foaled in 1911, 1912, or 1913 . .**	**4**	**2**	**1**

**** The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.***

HORSES—*continued.*

HUNTERS.

Animals entered in Classes 11 to 18 must be in the Yard before 8 a.m. on Thursday, May 28th, and must remain there till 4 p.m. on Saturday, May 30th, when they must be removed from the Yard.

CLASS	First Prize.	Second Prize.	Thrd Prize
	£	£	£
11.—MARE in-Foal, or with foal at foot . . .	15	10	3
12.—FILLY, COLT or GELDING, foaled in 1913 . . .	10	5	3
13.—FILLY, COLT or GELDING, foaled in 1912 . . .	10	5	3
14.—FILLY or GELDING, foaled in 1911	10	5	3
15.—MARE or GELDING, foaled in 1910	10	5	3
16.—MARE or GELDING, foaled before 1911, to carry under 14 stone	20	10	3
17.—MARE or GELDING, foaled before 1911, to carry 14 stone or over	20	10	3
18.—MARE or GELDING, foaled before 1911, that has not won a Prize of £10 or over under Saddle at any Show held previous to April 10, 1914 . . .	10	5	3

MEDALS.

(Offered by the Hunters' Improvement and National Light Horse Breeding Society, under Conditions 49 and 50.)

A Gold Medal, or £5 and a Bronze Medal, for the best Hunter Brood Mare in Class 11, registered with a number in the Hunter Stud Book at the time of entry or within a month of the award, not having previously won the above-named Society's Gold Medal as a Brood Mare in 1914, and which must have her foal at foot, or produce a living foal in 1914 to a thoroughbred horse or Registered Hunter sire. In the second instance a certificate to that effect must be forwarded before the Medal is sent.

A Silver Medal or £1 (at the option of the winner), for the Best Hunter Mare or Gelding of any age, exhibited by a member of the Hunters' Improvement and National Light Horse Breeding Society, whose subscription to that Society must be paid within a month of the award.

Only Prize-winners in the Classes will be eligible for these Medals.

SPECIAL PRIZES.

(Offered by the Swansea Local Committee.)

	First Prize.	Second Prize.	Thrd Prize
H.—*Best Local Exhibit in Class 11	**5**		
I.—*Best Local Exhibit in Class 12, 13 or 14 . . .	**5**		
J.—*Best Local Exhibit in Class 16	**5**		
K.—*Best Local Exhibit in Class 17	**5**		

** The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

(Offered by David Davies, Esq., M.P., Llandinam.)

L.—*A Silver Cup for the Best Hunter in Class 16 or 17, under the following conditions :—

The Cup to be won three times before becoming the property of the holder. The winner in this Class will be required to find two guarantors, approved by the Committee, for the safe return of the Cup to the Secretary of the Swansea Horse Show 28 days before that Society's Show in 1915.

HACKNEYS.

(Animals entered in Classes 19 and 20 must be registered or eligible for registration in the Hackney Horse Society's Stud Book.)

Animals entered in Classes 19 and 20 must be brought into the Yard after 6 p.m. on Saturday, May 30th, and before 8 a.m. on Monday, June 1st, and must remain in the Yard until 6 p.m. on Tuesday, June 2nd.

Class	First Prize. £	Second Prize. £	Thrd Prize £
19.—Mare in-Foal, or with foal at foot . . .	10	5	3
20.—Filly, Colt or Gelding, foaled in 1912 or 1913 .	10	5	3

MEDAL.

(Offered by the Hackney Horse Society.)

A Silver Medal for the Best Mare or Filly exhibited in Classes 19 or 20, under Condition 51.

SPECIAL PRIZES.

(Offered by the Swansea Local Committee.)

	First Prize. £	Second Prize. £	Thrd Prize £
M.—*Best Local Exhibit in Class 19	5		
N.—*Best Local Exhibit in Class 20	5		

PONIES.

Animals entered in Classes 21 to 28 must be brought into the Yard after 6 p.m. on Saturday, May 30th, and before 8 a.m. on Monday, June 1st, and must remain in the Yard until 6 p.m. on Tuesday, June 2nd.

	First Prize. £	Second Prize. £	Thrd Prize £
21.—Stallion, not exceeding 15 hands, suitable to get Polo or Riding Ponies	8	4	2
***22.—Mountain Stallion, not exceeding 12.2 hands, to be shown in hand . . . .**	4	2	1
23.—Mare, not exceeding 14.2 hands, suitable to breed Polo or Riding Ponies, in-foal, or with foal at foot	8	4	2

** The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

Class	First Prize.	Second Prize.	Third Prize
	£	£	£
***24.—Mountain Mare, not exceeding 12.2 hands, in-Foal or with Foal at foot . . . . . .**	**4**	**2**	**1**
25.—Welsh Mountain Mare, not exceeding 12.2 hands .	8	4	2
26.—Filly, Colt or Gelding, foaled in 1912, not exceeding 14.2 hands	8	4	2
27.—Filly, Colt or Gelding, foaled in 1911, not exceeding 14.2 hands	8	4	2
***28.—Mountain Filly or Colt, foaled in 1912 or 1913, not exceeding 12.2 hands . . . . . .**	**4**	**2**	**1**

SPECIAL PRIZE.

(Offered by F. F. Mason, Esq.)

O.—*Best Exhibit in Class 24, the property of a Member of the Fairwood Mountain Pony Association . .	3		

MEDALS.

(Offered by the National Pony Society.)

A Silver Medal for the best Polo Pony Brood Mare in the Brood Mare Classes, registered or eligible for registration in the Stud Book.

A Silver Medal for the best Polo Pony Stallion, registered or eligible for registration in the Stud Book; or best Polo Pony Entire Colt, one, two or three years old, entered or eligible for the Supplement, viz., by a Registered or Entered Sire or out of a Registered or Entered Dam.

A Bronze Medal for the best Foal, entered or eligible for the Supplement, viz., by a Registered or Entered Sire, or out of a Registered or Entered Dam.

(These Medals are offered subject to Condition No. 53.)

HARNESS.

ENTRIES CLOSE { **With boxes—April 3, or at double fees April 10.**
Without Boxes—May 9.

Horses entered in other Classes can, if eligible, be also entered on payment of an additional fee, in the Harness Classes.

Horses entered in the Double Harness and Tandem Classes can also be entered on payment of an additional fee, in the Single Harness Classes.

Horses entered in the Harness Classes only and not having a box in the Yard, must be in the Show Yard by 1 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the class has been judged.

29.—Mare or Gelding, not over 14.2 hands, to be driven in harness on the 1st day of Show .	10	5	2

* *The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

Class	First Prize.	Second Prize.	Third Prize
	£	£	£
30.—TANDEMS (Mares or Geldings), to be driven in harness on the 1st day of Show	10	5	2
***31.—Mare or Gelding, over 14.2 hands. To be driven in harness on the 1st day of Show . . .**	**5**	**3**	**1**
32.—MARE or GELDING, 15 hands or over, to be driven in harness on the 2nd day of Show . . .	10	5	2
33.—PAIR OF CARRIAGE HORSES (Mares or Geldings), to be driven in double harness on the 2nd day of Show	10	5	2
***34.—Mare or Gelding, not over 14.2 hands. To be driven in harness on the 2nd day of Show . . .**	**5**	**3**	**1**
35.—MARE or GELDING, over 14.2 and under 15 hands, to be driven in harness on the 3rd day of Show .	10	5	2
36.—TROTTING. Best MARE, STALLION, or GELDING under 15 hands, for speed, to be driven in harness on the 3rd day of Show	10	5	2
***37.—Tandems (Mares or Geldings), not over 14.2 hands. To be driven in harness on the 3rd day of Show .**	**5**	**2**	**1**
***38.—Cart Mare or Gelding, the property of a Tradesman carrying on business within a radius of six miles from Swansea Post Office, used solely by him, and driven regularly by himself or his servants for the delivery of goods sold by him, for a period of not less than three months prior to May 28th, 1914, and must be shown in a wagon, trolley, or cart, on the 4th day of Show . . . . .**	**5**	**2**	**1** **4th** **10/6**
***39.—Light Mare or Gelding, 14.3 hands and over, the property of a Tradesman carrying on business within a radius of six miles from Swansea Post Office, used solely by him, and driven regularly by himself or his servants for the delivery of goods sold by him, for a period of not less than three months prior to May 28th, 1914, and must be shown in a trade cart (not dog cart), on the 4th day of Show . . . .**	**5**	**2**	**1** **4th** **10/6**
***40.—Light Mare or Gelding, under 14.3 hands, the property of a Tradesman carrying on business within a radius of six miles from Swansea Post Office, used solely by him, and driven regularly by himself or his servants for the delivery of goods sold by him, for a period of not less than three months prior to May 28th, 1914, and must be shown in a trade cart (not dog cart), on the 4th day of Show .**	**5**	**2**	**1** **4th** **10/6**

** The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

A Silver Cup will be awarded to the First Prize Winners in Classes 38, 39, and 40, to be held under the following conditions :—

The Cups to be won three times before becoming the property of the holder. The winners will be required to find two guarantors, approved by the Committee, for the safe return of the Cups to the Secretary of the Swansea Horse Show 28 days before that Society's Show in 1915, for competition in the Local Classes at that Show.

Present holders of the Cups :—

Class 38—Not previously awarded.
„ 39—Messrs. E. Williams and Co.
„ 40—Mr. A. E. Edwards, Morriston.

CLASS	First Prize.	Second Prize.	Thrd Prize
	£	£	£
***41.—Mare or Gelding, over 14.2 hands, to be shown in Saddle on the 4th day of Show . . . .**	**5**	**3**	**1**
***42.—Mare or Gelding, not over 14.2 hands, ditto . .**	**5**	**3**	**1**
***43.—Trotting. Best Mare, Stallion or Gelding, any height, for speed. To be driven in harness on the 4th day of Show . . . . . .**	**5**	**3**	**1**
44.—Mare or Gelding, not over 13.2 hands, to be driven in harness on the 5th day of Show . . .	10	5	2
45.—Trotting. Best Mare, Stallion, or Gelding, 15 hands or over, for speed, to be driven in harness on the 5th day of Show	10	5	2
***46.—Mare or Gelding, not over 13.2 hands. To be driven in harness on the 5th day of Show . . .**	**5**	**3**	**1**

MEDAL.

(Offered by the Hackney Horse Society.)

A Silver Medal for the best Mare or Gelding exhibited in Single Harness in Classes 21 to 46, subject to Conditions 52.

JUMPING.

(For Regulations as to Jumping Classes see Conditions 54.)

ENTRIES CLOSE { With Boxes—April 3, or at double fees April 10.
Without Boxes—May 9.

Horses can be entered in as many Jumping Classes as they are eligible for on payment of the entry for each Class, and can take second or third prize in each Class, but only one first or equal first prize in

* *The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

Classes 47 to 52 and 54. In the event of an Animal which has already won a First Prize in the aforesaid Classes being again placed first, the animal next in point of merit will, if eligible succeed to the First Prize, and the Stewards reserve the right to amend the Awards correspondingly, and, if necessary, to proportionately reduce the amounts paid to the other Prize Winners in the Class.

Horses entered in the Jumping Classes only, and not having a box in the Yard, must be in the Show Yard by 1 p.m. on the day on which they compete and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.

CLASS	**First Prize.**	**Second Prize.**	**Third Prize**
	£	£	£
47.—MARE or GELDING, 15 hands and over, that shall jump over the course in the best form on the 1st day of Show	10	5	2
48.—MARE or GELDING, under 15 hands, ditto, ditto .	10	5	2
49.—MARE or GELDING, 15.3 hands and over, that shall jump over the course in the best form on the 2nd day of Show	10	5	2
50.—MARE or GELDING, under 15.3, ditto, ditto . .	10	5	2
51.—MARE or GELDING, 15 hands and over, that shall jump over the course in the best form on the 3rd day of Show	10	5	2
52.—MARE or GELDING, under 15 hands, ditto, ditto .	10	5	2
53.—MARE or GELDING, that shall jump highest on the 3rd day of Show	10	5	2
54.—MARE or GELDING, any height, that shall jump over the course in the best form on the 4th day of Show	10	5	2
***55.—Mare or Gelding, any height, ditto, ditto** . . .	5	3	1

CONSOLATION CLASS.

CLASS	**First Prize.**	**Second Prize.**	**Third Prize**
56.—MARE or GELDING, that has competed in Classes 47 to 55, and has not won Prizes to the value of £5, that shall jump over the course in the best form on the 5th day of the Show	7	3	

(Entries for this class must be made at the Secretary's Office in the Show Yard before 12 o'clock noon on Tuesday, June 2nd.)

* *The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

HORSES—*continued.*

CHAMPION CLASS.

Class	First Prize. £	Second Prize. £	Third Prize £
57.—Mare or Gelding, any height, having won a Prize in Classes 47 to 55, that shall jump over the course in the best form on the 5th day of Show	20		

(In this Class the whole of the Jumps will be raised at the discretion of the Stewards.)

(Entries for this class must be made at the Secretary's Office in the Show Yard, before 12 o'clock noon on Tuesday, June 2nd.)

MUSICAL CHAIRS.

Conditions—Competitors to canter one behind the other, and, on the Band ceasing, to go into the stalls mounted. There will be one stall less than there are competitors each round. Any competitor ceasing to canter before the Band stops to be disqualified. The winner to be the one who gets into the only stall left at the end.

Class	First Prize. £	Second Prize. £	Third Prize £
***58.—On the 1st day of Show**	5		
***59.—On the 3rd day of Show**	5		
***60.—On the 5th day of Show**	5		

POLO BALL COMPETITION.

(For Ponies not exceeding 14.2 hands.)

Conditions—The Polo Balls will be placed on the points of four posts in a line. Competitors (started in heats) must fetch each Polo Ball separately, and place it in a basket at the winning post. If a Polo Ball drops out of the basket, the competitor must dismount, remount, and put it into the basket before fetching the next ball.

Class	First Prize. £	Second Prize. £	Third Prize £
***61.—On the 2nd day of Show**	5		
***62.—On the 4th day of Show**	5		

CATTLE.

DEVON.

(£10 towards the Prizes in Classes 63 to 69 is contributed by the Devon Cattle Breeders' Society.)

Class	First Prize. £	Second Prize. £	Third Prize £
63.—Cow, in-Milk, calved before 1911	10	5	2
64.—Heifer, in-Milk, calved in 1911	10	5	2
65.—Heifer, calved in 1912	10	5	2
66.—Heifer, calved in 1913	10	5	2
67.—Bull, calved in 1910 or 1911	10	5	2
68.—Bull, calved in 1912	10	5	2
69.—Bull, calved in 1913	10	5	2

** The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

CATTLE—*continued.*	First Prize.	Second Prize.	Thrd Prize
	£	£	£
SOUTH DEVON.			
CLASS			
70.—Cow or HEIFER, in-Milk, calved in or before 1911	10	5	2
71.—HEIFER, calved in 1912	10	5	2
72.—HEIFER, calved in 1913	10	5	2
73.—BULL, calved in 1910 or 1911	10	5	2
74.—BULL, calved in 1912	10	5	2
75.—BULL, calved in 1913	10	5	2
SPECIAL PRIZES.			
(Offered by Charles A. Hanson, Esq., Fowey Hall, Cornwall, Alderman of the City of London.)			
A Challenge Cup for the best Cow in Milk, in the South Devon Classes, to be won three times in succession or four times altogether, before becoming the property of the winner.			
(Offered by the South Devon Herd Book Society).			
A Silver Medal for the best Exhibit in Classes 70 to 72.			
A Silver Medal for the best Exhibit in Classes 73 to 75.			
SHORTHORN.			
(The 1st Prize in Class 76 (and a Silver Medal to the Breeder of the Winner) is offered by the Shorthorn Society, and the 1st Prize in Class 77 by the Dairy Shorthorn (Coates's Herd Book) Association.)			
76.—Pedigree Dairy Cow, in-Milk, four years old and upwards on May 28th, eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize offered by the above-named Society or Association in 1914, to be milked in the ring before judging, under Conditions 63	**10**	5	
77.—Ditto under four years old ditto ditto	**10**	5	
78.—Cow, in-Milk, calved before 1911	10	5	2
79.—HEIFER, in-Milk, calved in 1911	10	5	2
80.—HEIFER, calved in 1912	10	5	2
81.—HEIFER, calved in 1913	10	5	2
82.—BULL, calved in 1910 or 1911	10	5	2
83.—BULL, calved in 1912	10	5	2
84.—BULL, calved in 1913	10	5	2
SPECIAL PRIZES.			
(Offered by the Swansea Local Committee).			
***Best Cow in Class 78**	**4**		
***Best Heifer in Class 80 or 81**	**4**		
***Best Bull in Classes 82 to 84**	**4**		

* *The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor*

CATTLE—*continued.*	First Prize.	Second Prize.	Thrd Prize
	£	£	£
CHAMPION PRIZE.			
(Offered by the Shorthorn Society.)			
Best Bull in Classes 82, to 84, entered in, or eligible for entry in, Coates's Herd Book	10		
HEREFORD.			
Class			
85.—Cow, in-Milk, calved before 1911	10	5	2
86.—Heifer, in-Milk, calved in 1911	10	5	2
87.—Heifer, calved in 1912	10	5	2
88.—Heifer, calved in 1913	10	5	2
89.—Bull, calved in 1910 or 1911	10	5	2
90.—Bull, calved in 1912	10	5	2
91.—Bull, calved in 1913	10	5	2
SPECIAL PRIZES.			
(Offered by the Swansea Local Committee).			
***Best Cow in Class 85**	4		
***Best Heifer in Class 87 or 88**	4		
***Best Bull in Classes 89 to 91**	4		
CHAMPION PRIZES.			
(Offered by the Hereford Herd Book Society.)			
Best Cow or Heifer in Classes 85 to 88	10		
Best Bull in Classes 89 to 91	10		
SUSSEX.			
92.—Cow or Heifer, in-Milk, calved in or before 1911	10	5	2
93.—Heifer, calved in 1912 or 1913	10	5	2
94.—Bull, calved in 1911, 1912 or 1913	10	5	2
SPECIAL PRIZES.			
(Offered by the Sussex Herd Book Society.)			
A Silver Medal for the Best Cow or Heifer, in Class 92 or 93.			
A Silver Medal for the Best Bull in Class 94.			
WELSH BLACK.			
(£20 of the Prizes in Classes 95 to 100 are contributed by the Welsh Black Cattle Society.)			
95.—Cow or Heifer, in-Milk, calved before December 1, 1911	8	4	2
96.—Heifer, calved on or after December 1st, 1911, and before December 1st, 1912	8	4	2

* *The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

CATTLE—*continued*.	First Prize.	Second Prize.	Thrd Prize
CLASS	£	£	£
97.—HEIFER, calved on or after December 1st, 1912, and before December 1st, 1913	8	4	2
98.—BULL, calved on or after December 1st, 1908, and before December 1st, 1911	8	4	2
99.—BULL, calved on or after December 1st, 1911, and before December 1st, 1912	8	4	2
100.—BULL, calved on or after December 1st, 1912, and before December 1st, 1913	8	4	2
SPECIAL PRIZES.			
(Offered by the Swansea Local Committee.)			
***Best Exhibit in Class 95**	4		
***Best Exhibit in Class 96 or 97**	4		
***Best Exhibit in Classes 98 to 100**	4		
ABERDEEN-ANGUS.			
(The 1st Prize in Class 101 is offered by the English Aberdeen-Angus Cattle Association.)			
101.—COW or HEIFER, in-Milk, calved before 1st Dec., 1911	10	5	2
102.—HEIFER, calved on or after 1st Dec., 1911	10	5	2
103.—HEIFER, calved on or after 1st Dec., 1912	10	5	2
104.—BULL, calved before Dec. 1st, 1912.	10	5	2
105.—BULL, calved on or after Dec. 1st, 1912	10	5	2
CHAMPION PRIZES.			
(Offered by the Aberdeen-Angus Cattle Society.)			
A Gold Medal, value £10, for the Best Animal in Classes 101 to 105.			
(Offered by the English Aberdeen-Angus-Cattle Association.)			
A Silver Medal for the Best Animal of opposite Sex to that awarded the Gold Medal in Classes 101 to 105.			
JERSEY.			
(The Prizes in Class 106 are offered by the English Jersey Cattle Society.)			
106.—Cow or Heifer, in-Milk, entered in or eligible for entry in the English Jersey Herd Book, bred by Exhibitor, and sired in Great Britain or Ireland	5	3	2
107.—COW, in-Milk, calved before 1911	10	5	2
108.—COW or HEIFER, in-Milk, calved in 1911	10	5	2
109.—HEIFER, in-Milk, calved in or since 1912	10	5	2
110.—HEIFER, calved in 1913	10	5	2
111.—BULL, calved in 1910 or 1911	10	5	2
112.—BULL, calved in 1912	10	5	2
113.—BULL, calved in 1913	10	5	2

**The Prizes marked with an asterisk are offered by or through the Swansea Local Committee, and are open only to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.*

CATTLE—*continued*.

GUERNSEY.

(£10 towards the Prizes in the Guernsey Classes is contributed by the English Guernsey Cattle Society.)

CLASS	First Prize	Second Prize.	Thrd Prize
	£	£	£
114.—Cow, in-Milk, calved before 1911	10	5	2
115.—HEIFER, in-Milk, calved in 1911	10	5	2
116.—HEIFER, calved in 1912	10	5	2
117.—HEIFER, calved in 1913	10	5	2
118.—BULL, calved in 1910 or 1911	10	5	2
119.—BULL, calved in 1912	10	5	2
120.—BULL, calved in 1913	10	5	2

KERRY.

	First Prize	Second Prize.	Thrd Prize
121.—Cow or HEIFER, in-Milk, calved in or before 1911	10	5	2
122.—HEIFER, calved in 1912 or 1913	10	5	2
123.—BULL, calved in 1911, 1912 or 1913	10	5	2

SPECIAL PRIZES.

(Offered by B. de Bertodano, Esq.)

For Best Animal in Classes 121, 122 or 123, to which the Cup has not previously been awarded.

The Bertodano Challenge Cup, value 25 Guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

The English Kerry and Dexter Cattle Society will present a Silver Medal to the owner of the winning animal on each occasion the Cup is competed for.

DEXTER.

	First Prize	Second Prize.	Thrd Prize
124.—Cow or HEIFER, in-Milk, calved in or before 1911	10	5	2
125.—HEIFER, calved in 1912 or 1913	10	5	2
126.—BULL, calved in 1911, 1912 or 1913	10	5	2

(The Prizes in Class 127 are offered by the English Kerry and Dexter Cattle Society.)

	First Prize	Second Prize.	Thrd Prize
127.—Bull, calved in 1913, whose sire and dam are entered in the English Kerry and Dexter or Royal Dublin Society's Herd Book	**10**	**3**	**2**

SPECIAL PRIZE.

(Offered by the English Kerry and Dexter Cattle Society.)

The Devonshire Challenge Cup, for the Best Animal in Classes 124 to 127, bred by Exhibitor, and entered in or eligible for the English Kerry and Dexter Herd

CATTLE—*continued.*

Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

The English Kerry and Dexter Cattle Society will present a Silver Medal to the owner of the winning animal on each occasion the Cup is competed for.

DAIRY.

(*See Regulation* 66).

Animals entered in the Breed Classes can, if eligible, be entered also, on payment of the additional fee, in Classes 128 *to* 130.

CLASS	First Prize. £	Second Prize. £	Third Prize £
128.—Cow, in-Milk, of any breed or cross, under 950 lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking 12 per cent. of total solids, of which not less than 3 per cent. shall be fat, the period of lactation being taken into consideration . .	10	5	2
129.—Cow, in-Milk, of any breed or cross, 950 lbs. live weight or over, ditto, ditto	10	5	2

SPECIAL PRIZE.

(Offered by the Swansea Local Committee, and confined to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon and Radnor.)

	First Prize. £	Second Prize. £	Third Prize £
Best Exhibit in Class 128 or 129	4		

BUTTER-TEST.

(*See Regulation* 66.)

(The Prizes in Class 130 are offered by the English Jersey Cattle Society, and entries in them are subject to any conditions issued by that Society previous to the tests.)

	First Prize.	Second Prize.	Third Prize
130. —Cow, eligible for or entered in the English Jersey Herd Book, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society	**Gold Medal or 10**	**Silver Medal**	**Bronze Medal**

Certificates of Merit will also be awarded to Cows under 5 years old obtaining 30 points, and to Cows 5 years old or over obtaining 35 points.

SHEEP.

DEVON LONGWOOLLED.

Class	First Prize. £	Second Prize. £	Thrd Prize £
131.—Shearling Ram	10	5	2
132.—Pen of three Shearling Ewes	10	5	2

SOUTH DEVON.

Class	First Prize. £	Second Prize. £	Thrd Prize £
133.—Shearling Ram	10	5	2
134.—Pen of Three Shearling Ewes	10	5	2

KENT OR ROMNEY MARSH.

(The Prizes in Class 135 are offered by the Kent or Romney Marsh Sheep Breeders' Association.)

Class	First Prize. £	Second Prize. £	Thrd Prize £
135.—Two Shear Ram	**10**	**5**	**2**
136.—Shearling Ram	10	5	2
137.—Pair of Ram Lambs, dropped in 1914	10	5	2
138.—Pen of three Shearling Ewes	10	5	2

SOUTHDOWN.

(The Prizes in Class 139 are offered by the Southdown Sheep Society.)

Class	First Prize. £	Second Prize. £	Thrd Prize £
139.—Two Shear Ram	**10**	**5**	**2**
140.—Shearling Ram	10	5	2
141.—Pair of Ram Lambs, dropped in 1914	10	5	2
142.—Pen of three Shearling Ewes	10	5	2

SPECIAL PRIZES.

(Offered by the Southdown Sheep Society, under Condition 69.)

Silver Medal or £1 for the Best Ram or Ram Lamb in Classes 139, 140, and 141.

HAMPSHIRE DOWN.

Class	First Prize. £	Second Prize. £	Thrd Prize £
143.—Shearling Ram	10	5	2
144.—Pair of Ram Lambs, dropped in 1914	10	5	2
145.—Pen of three Shearling Ewes	10	5	2

(The Prizes in Class 146 are offered by the Hampshire Down Sheep Breeders' Association.)

Class	First Prize. £	Second Prize. £	Thrd Prize £
146.—Pen of three Ewe Lambs, dropped in 1914	**7**	**3**	

OXFORD DOWN.

Class	First Prize. £	Second Prize. £	Thrd Prize £
147.—Shearling Ram	10	5	2
148.—Pair of Ram Lambs, dropped in 1914	10	5	2
149.—Pen of three Shearling Ewes	10	5	2

	First Prize.	Second Prize.	Thrd Priz
SHEEP.—*continued.*	£	£	£
(The Prizes in Class 150 are offered by the Oxford Down Sheep Breeders' Association, and will be withheld until the Animals awarded the prizes are registered in the Flock Book.)			
Class			
150.—Pair of Ewe Lambs, dropped in 1914	6	3	1
DORSET HORN.			
151.—Shearling Ram	10	5	2
152.—Pair of Ram Lambs, dropped after Nov. 1, 1913	10	5	2
153.—Pen of three Shearling Ewes	10	5	2
(The Prizes in Class 154 are offered by the Dorset Horn Sheep Breeders' Association.)			
154.—Pen of three Ewe Lambs, dropped after November 1st, 1913	10	3	2
DORSET DOWN.			
(The Prizes in Class 155 are offered by the Dorset Down Sheep Breeders' Association.)			
155.—Shearling Ram	10	3	2
156.—Pair of Ram Lambs, dropped in 1914	10	5	2
157.—Pen of three Shearling Ewes	10	5	2
EXMOOR HORN.			
(The Prizes in Class 158 are offered by the Exmoor Horn Sheep Breeders' Society.)			
158.—Old Ram, 2 Shear and upwards	5	3	2
159.—Shearling Ram	10	5	2
160.—Pen of three Shearling Ewes	10	5	2
WELSH MOUNTAIN.			
161.—Ram	10	5	2
162.—Pen of three Ewes	10	5	2
RYELAND.			
163.—Ram	10	5	2
164.—Pen of three Ewes	10	5	2
KERRY.			
(The Prizes in Classes 165 and 166 are offered by the Swansea Local Committee, and competition is confined to residents in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon, and Radnor.)			
165.—Ram	5	2	1
166.—Pen of Three Ewes	5	2	1

PIGS.

Class		First Prize.	Second Prize.	Third Prize.
		£	£	£
	BERKSHIRE.			
167.	—Boar, farrowed in 1911, 1912 or 1913	7	3	2
168.	—Pair of Boars, farrowed in 1914	5	2	1
169.	—Breeding Sow, farrowed before 1914	7	3	2
170.	—Pair of Breeding Sows, farrowed in 1914	5	2	1
	SPECIAL PRIZE. (Offered by the British Berkshire Society.)			
	Best Boar or Sow in the Berkshire Classes entered in, or eligible for, the Herd Book, whose Sire and Dam, together with the name of its Breeder, are entered in the Catalogue	5		
	LARGE BLACK.			
171.	—Boar, farrowed in 1911, 1912 or 1913	7	3	2
172.	—Pair of Boars, farrowed in 1914	5	2	1
173.	—Breeding Sow, farrowed before 1914	7	3	2
	(The Prizes in Class 174 are offered by the Large Black Pig Society.)			
174.	**—Breeding Sow, not exceeding 12 months old on May 1st, 1914**	7	3	2
175.	—Pair of Breeding Sows, farrowed in 1914	5	2	1
	LARGE WHITE.			
176.	—Boar, farrowed in 1911, 1912 or 1913	7	3	2
177.	—Pair of Boars, farrowed in 1914	5	2	1
178.	—Breeding Sow, farrowed before 1914	7	3	2
179.	—Pair of Breeding Sows, farrowed in 1914	5	2	1
	MIDDLE WHITE.			
180.	—Boar, farrowed in 1911, 1912 or 1913	7	3	2
181.	—Pair of Boars, farrowed in 1914	5	2	1
182.	—Breeding Sow, farrowed before 1914	7	3	2
183.	—Pair of Breeding Sows, farrowed in 1914	5	2	1
	TAMWORTH.			
184.	—Boar, farrowed in 1911, 1912, or 1913	7	3	2
185.	—Pair of Boars, farrowed in 1914	5	2	1
186.	—Breeding Sow, farrowed before 1914	7	3	2
187.	—Pair of Breeding Sows, farrowed in 1914	5	2	1

PRODUCE.

CIDER.

(Open to Growers or Makers.)

(The Winners in these Classes can have Gold, Silver, or Bronze Medals instead of Money Prizes, should they prefer it.)

	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.	Fourth Prize. £	s.
188.—Cask of not less than 18 and not more than 30 gallons of CIDER, made in 1913 of a specific gravity not exceeding 1·015 at 60° Fahr.	3	0	2	0	1	0		
189.—12 Bottles of CIDER, made in 1913, ditto	3	0	2	0	1	0		
190.—Cask of not less than 18 and not more than 30 Gallons of CIDER, made in 1913	3	0	2	0	1	0		
191.—12 Bottles of CIDER, made in 1913	3	0	2	0				
192.—12 Bottles of CIDER, made in any year previous to 1913	3	0	2	0	1	0		

CHEESE.

	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.	Fourth Prize. £	s.
193.—3 Cheddar CHEESES (not less than 56 lbs. each) made in 1913	15	0	10	0	5	0		
194.—3 Cheddar CHEESES (not over 56 lbs. each) made in 1913	8	0	5	0	3	0		
195.—3 Single Gloucester or Wilts CHEESES made in 1913	6	0	4	0	2	0		
196.—8 Loaf or other Truckle CHEESES made in 1913	5	0	3	0	2	0		
197.—3 Caerphilly CHEESES, made in 1914	5	0	3	0	2	0		
(The Prizes in Class 218 are offered by the Glamorgan County Council.								
218.—3 Caerphilly Cheeses, made in 1914 by a Student of the Glamorgan County Council Dairy or Cheese Schools	**2**	**0**	**1**	**0**	**0**	**10**		

CREAM CHEESE, BUTTER & CREAM.

(*These Classes are not open to Professional Teachers.*)

	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.	Fourth Prize. £	s.
198.—3 Cream or other Soft CHEESES	3	0	2	0	1	0	0	10
199.—3 lbs. of Fresh (or very slightly salted) BUTTER	4 4	0 0	3 3	0 0	2 2	0 0	1 1	0 0
200.—3 lbs. of Fresh (or very slightly salted) BUTTER, made from scalded cream	4	0	3	0	2	0	1	0
201.—3 lbs. of BUTTER, in the making of which no salt has been used, to be judged on the last day of Show	4	0	3	0	2	0	1	0
202.—Not less than 6 lbs. of Fresh BUTTER packed for transit	3	0	1	10	0	10		
203.—12 lbs. of Keeping BUTTER, in a jar or crock, to be delivered to the Secretary 4 weeks before the Show	4	0	3	0	2	0	1	0
204.—4 half-pounds of Scalded Cream	3	0	2	0	1	0		

CREAM CHEESE, BUTTER & CREAM—*continued.*	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
(The Prizes in Classes 219 and 220 are offered by the Glamorgan County Council.	£ s.	£ s.	£ s.	£ s.
219.—3lbs. of Fresh Butter, in the making of which no salt has been used, made by a Student of the Glamorganshire County Council Dairy or Cheese Schools	2 0	1 0	0 10	
220.—3lbs. of Fresh (slightly Salted) Butter, ditto .	2 0	1 0	0 10	

COMPETITIONS.

BUTTER-MAKING.

(*No Winner of a first prize given by this Society for Butter-making during the last* 3 *years is eligible to compete in Class* 205 *or* 206.)

(*For Conditions and Regulations see Entry Form.*)

Class				
205.—For first year students who have been through a course of instruction in Butter-making at any County Council School since the Society's last Show. On the 2nd day of Show	4 0	3 0	1 10	1 0
206.—For Men and Women, on the 3rd day of Show	4 0	3 0	1 10	1 0
207.—For Men and Women on the 4th day of Show	4 0	3 0	1 10	1 0
208.—For winners of first and second prizes in the Butter-making Classes 205, 206, 207, 221 to 225, or at any previous meeting of the Society. On the 5th day of Show 1st Prize, Gold Medal. 2nd Prize, Silver Medal. 3rd Prize, Bronze Medal.				

(The Prizes in Class 221 to 225 are offered by the Glamorgan County Council, and are open only to Students who have attended the Glamorgan County Council Dairy or Cheese Schools,)

221.—On the 1st day of Show, for competitors who have not won a prize at the London Dairy Show or the Shows of the Bath and West and Southern Counties, Royal Agricultural and Welsh National Societies . . .	2 0	1 10	1 0	0 10
222.—On the 2nd day of Show	2 0	1 10	1 0	0 10
223.—On the 3rd day of Show	2 0	1 10	1 0	0 10
224.—On the 4th day of Show	2 0	1 10	1 0	0 10
225.—On the 5th day of Show	2 0	1 10	1 0	0 10

MILKING.

209.—For Men 18 years of age and over . .	1 10	1 0	0 15	0 10
210.—For Women 18 years of age and over . .	1 10	1 0	0 15	0 10
211.—For Boys and Girls under 18 years of age .	1 10	1 0	0 15	0 10

	First Prize.		Second Prize.		Third Prize.		Fourth Prize.	
SHOEING.	£	s.	£	s.	£	s.	£	s.
212.—For Nag Horse Shoeing, by Smiths 25 years of age and over on the day of the competition, who have not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, on the 2nd day of Show	4	0	3	0	2	0	1	0
SPECIAL PRIZES. **(Offered by the Swansea Local Committee.)**								
Best Competitors in Class 212 resident in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon or Radnor, who have never won a 1st Prize at the Bath and West or Royal Shows	2	0	1	0				
213.—For Cart Horse Shoeing, by Smiths 25 years of age and over, ditto, ditto, on the 3rd day of Show	4	0	3	0	2	0	1	0
SPECIAL PRIZES. **(Offered by the Swansea Local Committee).**								
Best Competitors in Class 213 resident in the Counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon or Radnor, who have never won a 1st Prize at the Bath and West or Royal Shows	2	0	1	0				
214.—For Shoe Making or Turning, by Smiths under 25 years of age on the day of the competition, the patterns and descriptions of the Shoes to be supplied by the Judge, on the 4th day of Show	4	0	3	0	1	0	0	10
215.—For Shoe Making or Turning, by Smiths 25 years of age and over on the day of the competition, the patterns and descriptions of the Shoes to be supplied by the Judge, on the 4th day of Show . .	4	0	3	0	2	0	1	0
TIMBERING AND SPLICING COMPETITIONS.								
(The Prizes in Classes 216 and 217 are offered by the Swansea Local Committee).								
216.—Timbering Competition, open to Timbermen and Colliers, on the 4th day of Show . .	4	0	2	0	1	0		
217.—For the best Splice in Colliery Rope, on the 4th day of Show	4	0	2	0	1	0		

CONDITIONS AND REGULATIONS FOR LIVE STOCK.

GENERAL.

ENTRIES.

1. The following are the Fees payable for Stock entries made on or before April 3. After that date and up to April 10, entries (except in the Colliery, Harness and Jumping Classes) will only be received on payment, in each case, of double the fee named below. *Exhibitors are requested to note that no exception can be made to this.* The entry fee is not returnable to an Exhibitor who enters an Animal in a Class for which it is ineligible, or for entries that are withdrawn after the date of entry has expired.

	MEMBERS. (see Reg. 5 below)	NON-MEMBERS.
Horses (see also Reg. 2 below) for each Entry, including Horse Box	15s.	30s.
Cattle, Sheep and Pigs for each Entry	10s.	20s.

For particulars as to fees in the Produce, Poultry, Butter-Making, Milking, Shoeing, and Timbering and Splicing Classes, see Entry forms.

2. Animals entered in the Colliery, Harness and Jumping Classes, and not having a box in the Yard, must be in the Yard by the time stated on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as they have been judged. Entries in the Colliery, Harness and Jumping Classes, if no Horse Box is required, must reach the Secretary not later than May 9. If a Box is required the entry must reach the Secretary on or before April 3, or, at double fees as stated above, by April 10. The Entry Fees are:—

	MEMBERS.	NON-MEMBERS.
Open Harness or Jumping Classes, for each Entry (without Box)	5s.	10s.
Local Colliery, Harness and Jumping Classes (without Box)	2s. 6d.	5s.
Musical Chairs and Polo Ball Competitions ..	2s. 6d.	5s.

3. No Exhibitor can make more than three entries in any one Class of Horses, Cattle, Sheep or Pigs, except in the Harness or Jumping Classes.

4. No Entry will be received unless the fee accompanies it, and (if the Exhibitor is a Member of the Society) the subscription for the year, unless previously paid, together with any arrears that may be due.

5. The privilege of entering at Members' fees is strictly limited to members of the Society elected on or before January 27, 1914, and subscribing not less than £1 annually.

6. Where a Prize is offered for a *pair* or *pen* of Animals, single entry-fees only are payable for each *pair* or *pen*, and only one entry-form must be used.

7. All Entries must be made on the printed forms to be obtained of the Secretary (Thos. F. Plowman, 3, Pierrepont Street, Bath), and, in applying for Forms, Exhibitors are requested to state how many entries they wish to make of either Horses, Cattle, Sheep or Pigs, as each Stock entry must be made on a separate form.

8. Every Exhibitor or Competitor is requested to carefully examine the List of Prizes and Conditions, as he will be held responsible for the correctness of his Certificate of Entry. An Exhibitor omitting to give information asked for on the

Entry Form, with regard to the age, breeder, name, colour, sire, dam, &c., of an animal will be liable to have his entry disqualified, and if an exhibitor desires that his animal shall compete for any special prize offered, he must notify this on the entry form where requested to do so.

9. If an Exhibitor or Competitor fails, when called upon by the Stewards or Council, to prove the correctness of his Certificate of Entry to their satisfaction, the Entry may be disqualified, and any award made to it cancelled.

10. An Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep or Pigs, in a particular class, will be permitted, up to Friday, April 24, to withdraw the entry of such animal, and to substitute for it the entry of another animal in the same class, on payment of the difference, if any, between the amount of the entry fee originally paid for the animal withdrawn, and the post entry fee. When, after entry, an animal dies, the exhibitor will be permitted to substitute another entry for it, in the same class, without payment of any further fee, upon affording evidence of death and furnishing particulars of the substituted entry in time for the alteration to be made in the published catalogue.

11. An animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of Special Prizes for exhibits already entered in any particular Class.

12. Every exhibit must be the *bona fide* property of the Exhibitor both at the time of entry and on the first day of the Exhibition.

SHOW YARD.

13. The Yard will be open for the reception of Horses (see Regulation 2 for Harness and Jumping Horses), Cattle, Sheep and Pigs, on Tuesday and Wednesday, May 26 and 27, from 7 A.M. to 6 P.M. Agricultural Horses and Hunters will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries (except Hackneys and Ponies, which must be in the Yard before 8 a.m. on Monday, June 1), must be in the Yard the previous day. A label denoting the number of each entry will be sent by the Secretary and must be securely affixed to the head of the Animal. The carriage of exhibits must in all cases be paid by the Exhibitor. No exhibit subject to charges will be received by the Officers of the Society.

14. If an animal is brought into the Show Yard without having been entered for exhibition, the owner shall be liable to a fine of £2 and to the forfeiture of any prize awarded to him or her.

15. All Live Stock (see Conditions 2, 13, 39 and 40 for exceptions with regard to Horses) must remain in their places in the Show Yard until after 6 o'clock in the afternoon of the last day of the Show, and shall under no circumstances be taken out of their places in the interval without the special permission of the Stewards.

16. During the time the Show is open to the public no rug or cloth shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of the department. All sheets used for the purpose must be removed before 9 o'clock on each day the exhibition is open to the public, and must not be replaced until after the closing hour of the Show each day.

17. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations and Rules of the Society, and the Stewards shall have the power to remove from the Yard the Stock or property belonging to, and to cancel the admission ticket of, any Exhibitor who shall infringe any of the Regulations or Conditions of the Meeting, or who shall refuse to comply with any instructions given by the Stewards, without any responsibility attaching to the Stewards or the Society in consequence of such removal.

18. No animal shall be decorated with colours other than the Society's Prize Rosettes.

19. No person shall be allowed to fix any placard, or to take down any official placard, in the Yard, without the written permission of the Stewards.

20. All persons in charge of Exhibits will be subject to the orders of the Stewards, and will be required to parade or exhibit the animals in their charge at such times as may be directed by the Stewards. Servants must be in attendance each day during the Show at least a quarter of an hour before the time appointed for exhibiting the animals under their charge in the Show rings. Servants in charge of animals must see that the animals' boxes or stalls are kept clean. No oil or cooking stove of any description must be lighted in the Horse Boxes and any one found offending in this respect will be dealt with in accordance with Regulation 33. Owners of animals exhibited will be held responsible for the behaviour of their Servants, and for the consequences of any misconduct of such Servants.

21. Servants in charge of Stock at night must, if they leave the yard, return before 10 p.m., or they will not be admitted.

22. On the day previous to the opening and on each day of the Show hay or green food and straw will be supplied by the Society free of expense to exhibitors at the Forage Stores in the Show Yard. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their animals into the Yard. Corn, meal, and cake can be obtained in the Show Yard at fixed prices.

NOTE.—For the convenience of Exhibitors wishing to sell their animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

TICKETS.

23. Each Exhibitor of Live Stock will have a Free Ticket of admission to the Show Yard sent to him, except in the case of a Member of the Society, who will receive his Member's Ticket in lieu of an Exhibitor's Ticket. Tickets for the use of Servants in charge of Live Stock remaining in the Yard will also be sent, and the Exhibitor will he held responsible for the proper use of such Tickets. In the case of animals not having a box in the Yard, a Servant's Ticket will not be required, as the official label will admit the Driver or Rider, Horse and Vehicle into the Yard. In case of transfer or other improper use of a Ticket the Exhibitor will be required to pay a fine of £1 for each case. Exhibitors will be held responsible for the attendance at each Parade of as many Servants as Tickets have been issued for.

RESPONSIBILITY.

24. Neither the Society nor any of its Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstance whatever) to Exhibitors or their Servants, or to any animal or article exhibited, or property brought into the Show Yard, or otherwise for anything else in connection with, or arising out of, or attributable to, the Society's Show, or these or any other Conditions or Regulations prescribed by the Society in relation thereto.

25. Each Exhibitor shall be solely responsible for any consequential or other loss, injury, or damage done to, or occasioned by, or arising from, any animal or article exhibited by him, and shall indemnify the Society against all legal or other proceedings in regard thereto.

26. The Society, its Officers and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their entries.

DISQUALIFICATIONS.

27. The use of resin, soap, sawdust above the knee, or other substances designed to give an artificial appearance; cording; or any other improper means adopted in showing an animal in the Agricultural Horse Classes will be regarded as a disqualification.

28. No animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

29. An animal having any unsoundness likely to be transmitted to its progeny shall be disqualified thereby from receiving any Prize offered by or through the Society.

30. If it shall be proved to the satisfaction of the Stewards or Council that an Exhibitor or Competitor has knowingly signed an incorrect Certificate, or knowingly given an incorrect Pedigree of any animal, or has attempted to enter an animal or other exhibit or to obtain a Prize by any other unfair means at this or any other Agricultural Society's Meetings, or is under exclusion from any Breed Society for fraudulent practices, the Council shall have the power to cancel all awards made to such Exhibitor or Competitor, to disqualify him or her from exhibiting or competing at future Meetings of the Society, and to inform other Agricultural Associations of their action in this respect.

PENALTIES.

31. As the non-exhibition of animals entered for the Show causes unnecessary preparations and expense, and disarranges the Show Yard, any person entering Stock, and failing to exhibit the same, shall pay a penalty of 10s. for each entry, unless a Certificate, under the hand of the Exhibitor or his authorised agent, be lodged with the Secretary of the Society, before the day of exhibition, certifying that such non-exhibition is caused either by—(1) the death of the animal or animals; or (2) contagious or infectious disease (confirmed by the explanatory certificate of a Veterinary Surgeon); or (3) by its becoming ineligible for the Class in which it has been entered. The fine is not remitted in the case of an exhibitor selling an animal between the time of entry and the date of the Show.

32. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of £20, as and for liquidated damages, if any animal which he exhibits be, to his knowledge, suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased animal into the Yard, or to have it removed therefrom.

33. Any infringement of any of these or any other prescribed Regulations or Conditions will subject the Exhibitor to a fine of £1 by the Stewards, and to the forfeiture, by order of the Council, of any prize to which he may be entitled (in addition to all other consequences attaching to such infringement). The Council reserves to itself the right to inform other Agricultural Associations of any decision it may come to with respect to an Exhibitor.

AWARDS.

34. The Society reserves to itself the right to withhold any prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with.

35. In any Class of Stock in which Second and Third Prizes are offered by the Society, and where there are less than three entries, a Silver Medal will be given as Second Prize instead of Money, and where less than six entries, a Bronze Medal will be given as Third Prize instead of Money.

36. Only the signed awards of the Judges are accepted by the Society as evidence that a prize has been awarded, and the production of the prize card or the rosette by an Exhibitor will not entitle him to the prize.

37. The certificate of the Veterinary Inspector, whether as to age or soundness, shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. (See also **Regulation 47 with reference to Stallions and Mares.**) The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the animal to which a Prize has been awarded, such animal shall be disqualified from receiving such Prize.

PROTESTS.

38. Any Exhibitor wishing to lodge a protest having reference to Live Stock exhibited at this meeting must make the same in writing on a form to be obtained from the Secretary, and deposit with him the sum of £3. If on investigation the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited shall, at the discretion of the Council, be forfeited to the funds of the Society. All protests (except in the Harness or Jumping Classes) must be delivered at the Secretary's Office in the Showyard, on the day on which the award is made, and no protest will be SUBSEQUENTLY received, unless a reason satisfactory to the Stewards be assigned for the delay. Any protest against an award in the Harness or Jumping Classes must be made to the Steward in the ring immediately after the judging of the class to which it refers, and a deposit of £3 must. at the same time. be handed to the Steward. The Stewards will consider such protests at 11 o'clock on the following day at the Secretary's Office, at which time and place any person making a protest must attend or be represented by his authorised agent. The decision of the Stewards shall be final.

APPLYING TO CERTAIN CLASSES ONLY.

HORSES.

39. Horses can be removed from the Yard at night on deposit by the Exhibitor of £3 at the Finance Office, which sum will be forfeited if the Horse does not return at 8 A.M. each day during the Exhibition. This regulation does not apply to Animals not having a box in the Yard entered in the Harness and Jumping Classes only.

40. Exhibitors must provide saddles for Horses in Classes 15, 16, 17, 18, 41, 42 and 47 to 62, as they are to be ridden; and vehicles and harness for those in Classes 29 to 40, and 43 to 46, which are to be driven.

41. No Horse, unless a Foal, will be admitted into the ring without a proper bit.

42. The Prizes for Stallions in Classes 1, 21 and 22 will be withheld until a certificate from the owner is delivered to the Secretary that the Horse has served at least 10 Mares during the current season.

43 All Foals must be the offspring of the Mares with which they are exhibited, and the name of the Sire of the Foal must be stated on the certificate of entry.

44 Mares entered as in-Foal shall, except as otherwise stated, hereafter be certified to have produced a living Foal before August 1st of the year of the Show. If the required certificate, which must be on a form obtainable from the Secretary, is not received by September 30, 1914, the prize awarded will be forfeited.

45. Horses may, at the discretion of the Stewards, be measured, and the measurement shall be taken in the shoes worn by the entry at the time of judging, and these shoes shall not be removed to allow of the entry being shown in another class.

46. In the Hackney and Harness Classes for Hackneys exceeding 14 hands (except yearling colts and fillies) no shoe (nails included) may exceed 2 lbs. in weight, and for Ponies not exceeding 14 hands, yearling colts and yearling fillies, no shoe (nails included) may exceed 1½ lbs. in weight,

47. All Stallions and Mares (yearlings and foals excepted) to which prizes have been awarded in the breeding classes shall be examined by the Society's Veterinary Inspector, and unless pronounced free from indications of hereditary disease shall be ineligible to receive the prize. The owner of an Animal rejected under this Regulation may, upon his application in writing to the Secretary, be furnished with a copy of the Veterinary Certificate.

48. The following special conditions apply only to the Prizes offered by the Shire Horse Society, viz.: the owner of the animal entered to have been a

Member of the Bath and West and Southern Counties Society for not less than six months previous to April 3, 1914; a Mare five years old, or upwards, must produce a living Foal in the current year, or have had a living Foal in the preceding year; in the case of in-Foal Mares a certificate of foaling must be lodged with the Secretary of the Shire Horse Society before the medal will be despatched. No animal to compete which has won the Shire Horse Society's Gold Medal during the current year; the Royal and London Shows being excepted; the winning animal to be entered, or eligible for entry, in the Shire Horse Society's Stud Book; and a certificate that the winner is free from hereditary disease signed by the Society's Veterinary Inspector after his examination on the Show Ground, must be lodged with the Secretary of the Shire Horse Society, but Stallions on the Register of the Board of Agriculture, and Stallions, Mares and Fillies passed at the London Show, shall be exempt from further examination when selected for Medals during the current year. A prize of £5 will also be awarded to the breeder of the animal winning the Medal, provided that he is a member of the Shire Horse Society, and that the Dam is a Mare registered in the Shire Horse Stud Book. All awards must be completed within six months of the date upon which the Medal was awarded, or they will be void.

49. The following special conditions apply only to the Prize offered by the Hunters' Improvement and National Light Horse Breeding Society for Hunter Brood Mares, viz.:—The Mare awarded the Medal must possess a certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. Any Hunter Brood Mare, 8 years old or over, having been either awarded one of the Society's Gold Medals in 1912, 1913, or 1914, or selected as Reserve for same, or having been passed sound after January 1, 1911, by a Veterinary Surgeon appointed by the Hunters' Improvement and National Light Horse Breeding Society, shall be exempt from further examination upon the owner producing at the time of exhibition the official veterinary certificate issued by the Secretary of that Society.

50. The following special conditions apply only to the Prize offered by the Hunters' Improvement and National Light Horse Breeding Society for best Mare or Gelding of any age. The Hunter awarded the medal must possess a certificate of soundness from hereditary disease, signed by the Bath and West Society's Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. The selected Mare, if unregistered, or the selected Gelding, if unentered, must be registered or entered within a month of the award in the Hunter Stud Book. No animal may take more than one of these medals in 1914.

NOTE.—No awards of the above-named Society's Prizes or Medals to a Hunter named and registered in the Hunter Stud Book and subsequently entered by the owner under another name, will be recognised or confirmed unless a re-entry has been previously lodged by the owner for the Hunter Stud Book and the new name registered by the Society.

51. The following special conditions apply only to the Silver Medal offered by The Hackney Horse Society for Hackney Mare or Filly:—

1. No animal can take more than one Silver Medal in any one year (the London Hackney Show excluded).
2. If not already registered in the Stud Book, the entry of the winner must be duly lodged with the Hackney Horse Society, and if not completed before the expiration of one month after the date of the Show the Medal shall pass to the reserve number.
3. A certificate of soundness from hereditary disease, **signed by the Local Society's appointed Veterinary Inspector after his examination on the Show Ground,** must be lodged with the Secretary of the Hackney Horse Society.

NOTE.—Horses in Saddle and Harness Classes are eligible to compete for the Silver Medal, for which they must be exhibited in hand.

52. The following special conditions apply only to the Silver Medal offered by the Hackney Horse Society in the Single Harness Classes*:—All horses competing for the Medal must be *by a Registered Hackney Sire.* A certificate signed by the Breeder of the animal must be forwarded to the Secretary of the Hackney Horse Society before the Medal is despatched. Each animal must be examined by a qualified veterinary surgeon on the Show Ground, and a certificate of soundness must be supplied. The Medal must be open to all Classes, and not confined to local competition, and the name and number of the sire, and the name and address of the breeder of each animal, should appear in the catalogue. No animal can take more than one Medal in any one year.

53. The following special conditions apply only to the Medals offered by the National Pony Society. Height of Stallions and Colts not to exceed 15 hands, and Mares and Fillies not to exceed 14.2, as confirmed by Hurlingham Certificate or that of a qualified Veterinary Surgeon. Ponies having previously won the National Pony Society's Gold Medal during the current year not to be eligible to compete, and no Pony is qualified to take more than one Silver Medal under the same scheme during any one year. The entry of the Winner must, if not already entered in the Supplement or Registered in the Stud Book, be duly lodged with the National Pony Society before the Medals will be despatched. All Brood Mares to have foal-at-foot or be due to foal in 1914, or if they have foaled in 1914 and the foal has died, a veterinary certificate to the effect that the foal was born alive to be provided. All foals to be by a Thoroughbred, Eastern, Registered or Entered Sire.

54. The following special conditions apply to Horses entered in the Jumping Competitions :—The jumps may consist of single hurdle, gate, double hurdle, bank, wall and water jump, at the discretion of the Judge and Stewards. Each horse competing shall have its catalogue number affixed to its breast in such a way that it may be easily seen by the general public. Each horse competing shall be ridden at the fences in the order announced by the Stewards. In case of a horse refusing his fence it shall be allowed two further trials, and *no more.* No change of rider shall take place during the competition. The Judge may take into consideration the style in which the fences are jumped, as well as the height and breadth, and his decision shall be final.

CATTLE.

55. All cattle must be properly secured to the satisfaction of the Officers of the Society, on being brought to the gate of the Yard, or they will not be admitted.

56. All Bulls must have a ring or clamp attached to the nose, and in the aged Classes must be provided with a strong chain, and be led with a proper stick.

57. All cattle will be required to be paraded in the ring at least once a day at the discretion of the Stewards.

58. No Bull calved before January 1st, 1912, or in the Aberdeen-Angus or Welsh Black Classes before December 1st, 1911, will be eligible to receive a Prize until certified to have served not less than six different Cows (or Heifers) previous to June 1st, 1914, and to be the sire of live calves dropped in the year 1914, or in the Aberdeen-Angus or Welsh Black Classes after December 1st, 1913.

59. No Cow or Heifer, entered as in-milk, will be eligible to receive a Prize unless certified to have had a living Calf within the fifteen months preceding the date of Show, or that the Calf, if dead, was born at the proper time.

60. Every Cow or Heifer in-milk shall be milked dry in the Show Yard at 7.30 p.m. on the evening preceding the day of judging, in the presence of an officer of the Society appointed for the purpose.

61. Any animal in the Cattle Classes found to be artificially coloured will be disqualified.

62. Any person selling milk in the Yard, except in the place appointed by the Stewards, will be fined 5s. for each infringement of this Regulation. All Milk will be purchased by the Society's Milk Contractor, and notice as to the time of collection will be posted in the Show Yard. The Milk from Cows exhibited must not be taken out of the Yard for Sale without the permission of the Stewards.

63. The following conditions apply only to the prizes offered for Pedigree Shorthorn Dairy Cows:—The Cows and Heifers entered will be clean milked out at 6 o'clock on the evening preceding the opening of the Show to the satisfaction of the Stewards, and will be again milked in the ring on the first morning of the Show in the presence of the Judge, who shall see the Milk weighed, and any animal not yielding up to the following standard will not be awarded a prize:—

	If she has calved within three calendar months of the first day of the Show.	If she has calved more than three calendar months before the first day of the Show.
Cows, 4 years and upwards, *not less than* ..	25 lbs. of Milk	20 lbs. of Milk
Cows, 3 years old and under 4 „ „ ..	20 „ „ „	15 „ „ „
Heifers, under 3 years old „ „ ..	15 „ „ „	10 „ „ „

64.—In the Kerry and Dexter Classes clipping (except in the case of a few hairs on the top of the tail) will disqualify an animal.

65. The following condition applies to animals entered in the Butter and Milk Test Classes:—The date of last calving must be given on the entry form and, when an animal calves between the date of entry and that of the Show, notice of such calving must be sent to the Secretary, or the animal may be disqualified.

66. Except in the Local and Dairy Classes, every animal entered for competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, where such Herd Book exists and has been in existence for not less than seven years. Where an animal is entered by the Exhibitor as eligible for entry in the Herd Book of its breed, proof of such eligibility must be furnished to the Secretary at the time of making the entry.

SHEEP.

67. Each pen of Ewes must be of the same Flock.

68. The following conditions apply to the special prize offered by the Southdown Sheep Society:—The sheep competing must be entered or eligible for entry in the Flock Book. In the Class for pairs of ram lambs, exhibitors will have the privilege of competing for the medal with any one of their exhibits.

69. Except in the Local Classes, every animal entered for competition must be entered or certified as eligible to be entered, in the Flock Book of its Breed, where such Flock Book exists and has been in existence for not less than seven years. Where an animal is entered by the Exhibitor as eligible for entry in the Flock Book of its breed, proof of such eligibility must be furnished to the Secretary at the time of making the entry.

PIGS.

70. The pair of Pigs in each pen must be of the same litter.

71. All Sows farrowed before 1914 shall be certified to have had a litter of live Pigs within six months preceding the first day of exhibition, or to be in-pig at the

time of entering, so as to produce a litter of Pigs, farrowed at their proper time, before the 1st of September following. In the case of in-Pig Sows the Prize will be withheld until the Exhibitor shall have furnished the Secretary with a certificate of farrowing as above. If the required Certificate, which must be on a form obtainable from the Secretary, is not received on or before the 15th September following, the Prize awarded will be forfeited.

72. All Pigs exhibited with a Sow shall be her own produce, of the same litter, and not exceeding two months old at the time of the Show.

73. No Sow above 18 months old that has not produced a litter of live Pigs shall be eligible to compete in any of the Classes.

74. Any animal in the Pig Classes found to be artificially coloured or oiled will be disqualified.

75. Should any question arise as to the age of any exhibit in the Pig classes, the Stewards shall, at the request of the Judge, have the state of their Dentition examined by a competent authority. If the state of the Dentition shall indicate that the age of any of the Pigs does not agree with the Dentition Test, the Stewards shall report the same to the Council, who shall have power to disqualify such Pig or Pigs. The following is the state of Dentition in Pigs which will be considered as indicating that they exceed the ages specified below :—Six Months : Pigs having their corner permanent incisors cut will be considered as exceeding this age. Nine months : Pigs having their permanent tusks more than half up, will be considered as exceeding this age. Twelve Months : Pigs having their central permanent incisors up, and any of the three first permanent molars cut, will be considered as exceeding this age. Fifteen Months : Pigs having their lateral temporary incisors shed, and the permanents appearing, will be considered as exceeding this age. Eighteen Months : Pigs having their lateral permanent incisors fully up will be considered as exceeding this age.

CIDER, DAIRY PRODUCE, POULTRY, BUTTER-MAKING, MILKING, SHOEING, TIMBERING AND SPLICING COMPETITIONS.

For Conditions and Regulations see entry forms.

ADJUDICATION OF PRIZES.

76. The Judges are instructed as follows, and entries are received subject to this :

a. Not to award any Prize or Commendation unless the entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare, unless it is free from unsoundness likely to be transmitted to its progeny ; or if a Gelding, unless free from unsoundness ; in either case, an accident having temporary consequences only excepted, and in awarding the Hunters' Improvement Society's Medals to give preference to animals showing weight-carrying properties.

c. In awarding Prizes to Cattle, Sheep and Pigs, to decide according to the relative merits of the animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To make the milking capacity and form of udder one of the chief points in awarding prizes to Cows and Heifers in Milk.

e. To draw the attention of the Stewards to any exhibit that has been improperly prepared for exhibition, or is wrongly entered.

f. To give in a " RESERVE NUMBER " in each Class, indicating the animal or exhibit which in their opinion possesses sufficient merit for the Prize, if the animal or exhibit to which the Prize is awarded should become disqualified. Should the " Reserved Number " succeed to a prize, and be itself disqualified, the prize will be forfeited.

g. Immediately after the Judging to deliver to the Stewards their signed awards stating the numbers to which the Prizes are adjudged, and noting all disqualifications.

77. Should any question arise upon which the Judges may desire a further opinion, the Stewards shall provide them with a Referee.

PAYMENT OF PRIZES.

78. Cheques for the Prizes awarded (except where further qualification of an animal is required) will be drawn at the meeting of the Finance Committee held in July, 1914, and will then be forwarded by post to the Exhibitors to whom they have been awarded.

INTERPRETATION OF CONDITIONS

79. The Society reserves to itself by its Council the sole and absolute right to interpret these or any other prescribed conditions and regulations, or Prize Sheets, and to arbitrarily settle and determine all matters, questions or differences in regard thereto, or otherwise arising out of or connected with or incident to the Show. Also to refuse and to cancel any entries, disqualify Exhibitors, prohibit exhibition of entries, vary or cancel awards of prizes or reserved numbers, and relax conditions, as the Society may deem expedient.

POULTRY.

(*Under Poultry Club Rules*).

The Birds in Classes 1 *to* 49 *must have been hatched previous to January* 1, 1914.

Class	First Prize.		Second Prize.		Third Prize.	
	£	s.	£	s.	£	s.
1.—ANY DISTINCT BREED, except Bantams—Cock and 3 Hens, bred in 1912 or 1913, the property of one Exhibitor, mated for breeding	3	0	2	0	1	0
2.—Cochin or Brahma—Cock	1	0	0	15	0	10
3.—Ditto—Hen	1	0	0	15	0	10
4.—Plymouth Rock—Cock	1	0	0	15	0	10
5.—Ditto—Hen	1	0	0	15	0	10
6.—Orpington (Buff)—Cock	1	0	0	15	0	10
7.—Ditto—Hen	1	0	0	15	0	10
8.—Orpington (Black)—Cock	1	0	0	15	0	10
9.—Ditto—Hen	1	0	0	15	0	10
10.—Orpington (White)—Cock	1	0	0	15	0	10
11.—Ditto—Hen	1	0	0	15	0	10
12.—Minorca—Cock	1	0	0	15	0	10
13.—Ditto—Hen	1	0	0	15	0	10
14.—Rhode Island (Red)—Cock or Hen	1	0	0	15	0	10
15.—Sussex—Cock	1	0	0	15	0	10
16.—Ditto—Hen	1	0	0	15	0	10
17.—Dorking—Cock	1	0	0	15	0	10
18.—Ditto—Hen	1	0	0	15	0	10
19.—Faverolles—Cock	1	0	0	15	0	10
20.—Ditto—Hen	1	0	0	15	0	10
21.—Langshan—Cock	1	0	0	15	0	10
22.—Ditto—Hen	1	0	0	15	0	10
23.—Wyandotte—(Silver or Gold Laced)—Cock	1	0	0	15	0	10
24.—Ditto—Hen	1	0	0	15	0	10
25.—Ditto (White)—Cock	1	0	0	15	0	10
26.—Ditto—Hen	1	0	0	15	0	10
27.—Ditto—(Black)—Cock	1	0	0	15	0	10
28.—Ditto—Hen	1	0	0	15	0	10
29.—Ditto—(Any other variety)—Cock	1	0	0	15	0	10
30.—Ditto—Hen	1	0	0	15	0	10
31.—Leghorn (White)—Cock	1	0	0	15	0	10
32.—Ditto—Hen	1	0	0	15	0	10
33.—Ditto—(Any other variety)—Cock	1	0	0	15	0	10
34.—Ditto—Hen	1	0	0	15	0	10
35.—Hamburg (Black)—Cock	1	0	0	15	0	10
36.—Ditto—Hen	1	0	0	15	0	10
37.—Ditto (Any other variety)—Cock	1	0	0	15	0	10
38.—Ditto—Hen	1	0	0	15	0	10
39.—Old English Game (Black Red)—Cock	1	0	0	15	0	10
40.—Ditto—Hen	1	0	0	15	0	10
41.—Ditto (Any other variety)—Cock	1	0	0	15	0	10
42.—Ditto—Hen	1	0	0	15	0	10

	First Prize.		Second Prize.		Third Prize.	
POULTRY—*continued.*	£	s.	£	s.	£	s.
CLASS						
43.—INDIAN GAME—Cock	1	0	0	15	0	10
44.—Ditto—Hen	1	0	0	15	0	10
45.—FRENCH (excluding Faverolles)—Cock	1	0	0	15	0	10
46.—Ditto—Hen	1	0	0	15	0	10
47.—ANY OTHER DISTINCT BREED (not previously mentioned)—Cock	1	0	0	15	0	10
48.—Ditto—Hen	1	0	0	15	0	10
49.—Cock and Hen, of any pure breed, best mated to produce Table Poultry	1	0	0	15	0	10
SELLING CLASSES.						
50.—ANY DISTINCT BREED—Cock or Cockerel (*price not to exceed* £1 1*s.*)	1	0	0	15	0	10
51.—ANY DISTINCT BREED—Hen or Pullet (*price not to exceed* £1 1*s.*)	1	0	0	15	0	10
CHICKENS OF 1914.						
52.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX or DORKING — Cockerel	1	0	0	15	0	10
53.—Ditto—Pullet	1	0	0	15	0	10
54.—MINORCA, WYANDOTTE, LEGHORN, HAMBURG, FAVEROLLES or FRENCH — Cockerel	1	0	0	15	0	10
55.—Ditto—Pullet	1	0	0	15	0	10
56.—GAME, MALAY or any other Distinct Breed not previously mentioned—Cockerel	1	0	0	15	0	10
57.—Ditto—Pullet	1	0	0	15	0	10
LIVE TABLE POULTRY.						
58.—Pair of Cockerels of any Pure Breed, hatched in 1914	1	0	0	15	0	10
59.—Ditto—Pullets—ditto, ditto	1	0	0	15	0	10
60.—Pair of Cross-Bred Cockerels, hatched in 1914	1	0	0	15	0	10
61.—Ditto—Pullets—ditto	1	0	0	15	0	10
SPECIAL PRIZES.						
(Offered by the Poultry Club.)						
A Gold Medal for best Cock in the Poultry Classes, the Property of a Member of the Poultry Club.						
„ „ „ Hen, ditto, ditto						
„ „ „ Cockerel, ditto, ditto						
„ „ „ Pullet, ditto, ditto						

POULTRY—*continued.*

SPECIAL PRIZES.

DUCKS, GEESE & TURKEYS.

Class	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.
62.—Drake or Duck (Aylesbury)	1	0	0	15	0	10
63.— „ „ (Rouen)	1	0	0	15	0	10
64.— „ „ (Pekin)	1	0	0	15	0	10
65.—Gander or Goose	1	0	0	15	0	10
66.—Turkey—Cock or Hen	1	0	0	15	0	10

DEAD TABLE POULTRY.

(*To be forwarded killed and plucked.*)

	£	s.	£	s.	£	s.
67.—Pair of Cockerels of 1914 of any Pure Breed	1	0	0	15	0	10
68.—Ditto—Pullets—ditto	1	0	0	15	0	10
69.—Pair of Cross-Bred Cockerels of 1914	1	0	0	15	0	10
70.—Ditto—Pullets—ditto	1	0	0	15	0	10
71.—Pair of Ducklings of 1914	1	0	0	15	0	10

POULTRY.

(Under Poultry Club Rules.)

CONDITIONS AND REGULATIONS.

CHARGES, &c.

1. Exhibitors may make an unlimited number of Entries on payment of fees as follows :—

	MEMBERS.	NON MEMBERS.
	s. d.	*s. d.*
Each Entry	2 0	3 0

The above fees include coops, food, and attendance.

N.B.—The above fees *must* be sent with the entries, or no notice will be taken of the latter.

2. The privilege of entering at Members' fees is strictly limited to Members of the Bath and West Society, elected on or before January 27, 1914, and subscribing not less than £1 annually.

3. All entries must be made on the printed forms to be obtained of the Secretary (THOS. F. PLOWMAN, 3, Pierrepont Street, Bath), and such forms must be correctly filled up and returned to the Secretary, together with all fees due on or before May 2. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in the entry forms, and birds entered in a wrong class will be necessarily excluded from competition. No alterations can be made in entry forms after they have been received by the Secretary.

4. The Council reserve the right to refuse the entries of any person.

5. Exhibitors must state the price and breed of their birds on their entry forms.

SHOW YARD.

6. All birds must be in the Show Yard by 6 p.m. *on Wednesday, May* 27, and no bird can be removed before 7 p.m. on Tuesday, June 2. Any Exhibitors who send for their birds must do so between 7 and 8 p.m. on that day.

7. All carriage must be prepaid to Swansea Railway Station, otherwise the birds will not be received at the Exhibition; but they will be conveyed free of expense from the Station to the Show Yard and back.

8. No Exhibitor or Servant will be allowed into the tent until the birds have been judged.

9. The Poultry Tent will not be open to the public until 2 o'clock on the first day of the Exhibition.

10. A Non-Transferable Admission Ticket for the Exhibition will be sent to each Exhibitor whose entry fees amount to £1 and upwards.

TABLE POULTRY.

11. In these Classes (58 to 61 and 67 to 71) quality for the table will be considered before mere weight. The date of hatching must be given, and, in the case of cross-bred birds, the breeds of the parents.

12. In Classes 67 to 71 the Birds must be sent killed and plucked. They will be withdrawn from exhibition when considered necessary, and, if unsold, will be returned to Exhibitors after 6 p.m. on Saturday, May 30. Exhibitors are recommended to put a reasonable price upon their exhibits in these Classes so as to promote the sale of them.

SALES.

13. All birds may be claimed at the price put upon them, any time after 4 o'clock on Thursday, May 28, and a sale *must take place* if the price stated be paid to the

Clerk in the Poultry Office at the time of claiming. *No alteration can be made in the prices stated on the entry forms* and in the Catalogue until after Friday, May 29, when the price may be reduced on payment to the Stewards of one shilling per pen on each alteration. Birds must be *sold in pens*, and the price stated must include the basket. A charge of 10 per cent. will be made for all birds sold. The persons who have the management of the sales cannot take charge of birds which are disposed of privately.

AWARDS.

14. No second prize will be given in any of the Classes unless there are three entries, and no third prize unless there are six entries.

DISQUALIFICATION.

15. The Judges are empowered to withhold a prize or prizes where birds are not considered of sufficient merit, or in the Chicken Classes where they consider them over age, and are instructed to disqualify any that have been clipped, drawn, trimmed, marked, or dyed. In the Game Classes birds can be shown either dubbed or undubbed.

16. An Exhibitor detected in a false statement as to the age, &c., of any bird, or in any other practice calculated to deceive or mislead the Judges or Stewards, shall forfeit all or any prizes awarded to him or her at the Show, and will be disqualified from competing at any future Show of the Society, and the Council shall have the power to inform other Societies of their action in this respect.

17. No person who shall have been shown to the satisfaction of the Council to have been excluded from exhibiting for Prizes at the exhibition of any other Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, and no person who is under exclusion from any Breed Society for fraudulent practices, shall be allowed to exhibit at this or any other meeting of the Society.

18. Unhealthy birds will not be exhibited, but will be immediately returned to their owners, and the fees will be forfeited.

PROTESTS.

19. In order to check frivolous and vexatious protests, no protest will be entertained unless accompanied by a deposit of £1 in each case; and in case the protest is not substantiated the deposit may be forfeited to the funds of the Society. All protests must be made before 12 o'clock (noon) on Friday, May 29.

FORFEITS.

20. Persons entering birds and failing to send the same to the Exhibition will forfeit the entrance fee for each pen so left vacant.

GENERAL.

21. All birds shown must be *bona fide* the property of the Exhibitor.

22. For each pen entered the Exhibitor will receive a label, on the reverse side of which he must legibly write his name and address for the return journey.

23. All eggs laid at the Exhibition will be destroyed.

24. The Stewards pledge themselves to take every care of the birds exhibited, but neither they nor the Society will, in any case, be responsible for any accident, loss, or damage, from whatever cause arising, the exhibits being entered at the sole risk of the Exhibitors, and Exhibitors will be required to hold the Society harmless in the event of loss.

25. In case of death of any bird during the Exhibition, it will be sent back for the inspection of the Exhibitor.

26. The Poultry Department is subject to the Rules and Regulations of the Society, and its Officers.

*** *The use of properly constructed Poultry Baskets will facilitate the safe and speedy conveyance of the birds to and from the Exhibition.*

The Society cannot, under any circumstances, undertake to send telegrams to Exhibitors as to Judges' awards.

Applications for Catalogues (price 1*s. each) and printed lists of awards should be made only to the Publishers,* Messrs. WILLIAM LEWIS AND SON, *Herald Office, Bath.*

By order of the Council,

3, *Pierrepont Street, Bath.* **THOMAS F. PLOWMAN,** *Secretary.*

TELEGRAPHIC ADDRESS:—**"PLOWMAN, BATH."**
TELEPHONE NO **610**.

FINANCIAL STATEMENTS

FOR

1913

WITH ITEMS OF 1912 *FOR COMPARISON.*

PAGES

SUMMARY OF THE CASH ACCOUNT ... ... cxlii-cxliii

DETAILED CASH ACCOUNT ... ... cxliv-clv

ASSETS AND LIABILITIES clvi

STATEMENT SHOWING RESULT OF SHOW clvii

The Bath and West and

SUMMARY OF THE CASH ACCOUNT

WITH COMPARATIVE

Dr.

Page of accompanying Cash Account.	RECEIPTS.		1913. Truro.		1912. Bath.
			£ s. d.	£ s. d.	£ s. d.
	General:—				
cxliv	Dividends and Interest		653 6 0		625 2 4
cxliv	Subscriptions from Members		990 0 0		1,050 5 0
cxliv	Life Members		15 0 0		
cxliv	Journal		44 10 7		40 11 9
cxliv	Miscellaneous		3 5 7		3 19 7
				1,706 2 2	1,719 18 8
	Show:				
cxliv	Implements		1,269 15 8		1,914 18 11
		£ s. d.			
cxlvi	Horses	875 17 6			754 0 0
cxlvi	Cattle, Sheep and Pigs	912 10 0			1,062 7 0
cxlvi	Catalogues, &c.	108 7 9			104 19 5
			1,896 15 3		1,921 15 5
cxlvi	Poultry		75 1 7		88 12 8
cxlviii	Shoeing		21 10 0		31 0 0
cxlviii	Art Manufactures		29 8 0		107 2 0
cl	Cheese and Butter		78 2 5		120 13 3
cl	Working Dairy		184 6 3		133 15 3
cl	Cider		11 7 6		12 17 6
clii	Admissions		3,857 10 6		3,601 3 6
clii	Unapportionable:—				
	Contract Premiums	496 12 0			560 15 0
	Sales and Fittings	415 13 3			629 2 8
			912 5 3		1,180 17 8
clii	Subscription from Swansea for 1914 Show		800 0 0		800 0 0
				9,136 2 5	9,921 16 2
				10,842 4 7	11,641 14 10
cliv	Balance in Bank, January 1st			406 9 5	1,320 17 2
				£ 11,248 14 0	12,962 12 0

Southern Counties Society.

FOR THE YEAR ENDING DEC. 31st, 1913.

STATEMENT FOR 1912.   Cr.

Page of accompanying Cash Account.	PAYMENTS.		1913. Truro.		1912. Bath.
			£ s. d.	£ s. d.	£ s. d.
	General:				
cxlv	Salaries		1,100 0 0		1,100 0 0
cxlv	Printing, Postage, Stationery, &c.		226 6 7		230 14 9
cxlv	Journal		406 18 7		420 10 11
				1,733 5 2	1,751 5 8
	Show:—				
cxlv	Implements		475 5 7		651 6 11
		£ s. d.			
cxlvii	Horses	1,256 17 9			1,181 0 3
cxlvii	Cattle, Sheep, and Pigs	2,413 11 11			2,514 1 5
cxlvii	Fodder, &c.	580 2 6			658 19 6
			4,250 12 2		4,354 1 2
cxlvii	Poultry		246 9 1		254 8 0
cxlix	Shoeing		141 15 8		121 0 11
cxlix	Art Manufactures		78 8 9		59 9 5
cxlix	Nature Study		75 18 3		42 8 10
cxlix	Forestry		95 18 10		66 11 11
cxlix	Music		258 5 1		240 19 6
cxlix	Horticulture		164 0 5		151 18 1
cli	Cheese and Butter		236 16 3		249 4 9
cli	Working Dairy		554 3 2		433 16 2
cli	Cider		100 8 1		75 13 4
cliii	Public Announcements		382 3 3		450 0 8
cliii	Unapportionable:—				
	Erection of Offices, &c.	1,376 17 0			1,144 11 9
	Carriage of Plant	111 15 9			107 19 3
	Stand Fittings	174 9 3			281 12 0
	Police	105 12 6			91 0 0
	Miscellaneous	292 14 4			327 2 0
			2,061 8 10		1,952 5 9
				9,121 13 5	9,103 14 5
	Experiments: -				
clv	Cider Institute			100 0 0	125 0 0
				10,954 18 7	10,980 0 1
clv	Investments				1,576 2 6
clv	Balance in Bank, Dec. 31st.			293 15 5	406 9 5
				£ 11,248 14 0	12,962 12 0

January 19*th*, 1914.
Audited and found correct,
F. CLIFFORD GOODMAN, F.C.A.,
Auditor.

Passed by Council,
January 27*th*, 1914.
THOS. F. PLOWMAN,
Secretary.

The Bath and West and

Dr. CASH ACCOUNT FOR THE YEAR ENDING DEC. 31st,

RECEIPTS.	1913. Truro.		1912. Bath.
	£ s. d.	£ s. d.	£ s. d.
DIVIDENDS AND INTEREST :—			
Consols	137 10 4		137 10 4
New Zealand Stock	51 18 6		51 18 6
India Stock	212 19 4		212 19 4
Queensland Stock	103 12 8		103 12 8
New South Wales Stock	66 0 2		66 0 2
Canadian Pacific Railway Stock . . .	56 10 0		28 5 0
Interest on Deposit	25 0 0		25 1 4
		653 6 0	625 2 4
GENERAL RECEIPTS :—			
Cancelled Cheques, &c.		3 5 7	3 19 7
SUBSCRIPTIONS FROM MEMBERS :—			
Arrears	18 5 0		17 14 0
Governors	171 17 0		171 15 0
Subscribers of £1 and upwards . . .	792 8 0		853 6 0
Ditto of 10s.	7 10 0		7 10 0
		990 0 0	1,050 5 0
LIFE COMPOSITIONS		15 0 0	
JOURNAL :—			
Sales	8 5 10		9 13 7
Advertisements	36 4 9		30 18 2
		44 10 7	40 11 9
IMPLEMENTS :—			
Fees for Space :—			
Machinery-in-Motion Shedding . .	297 5 0		455 15 0
Ordinary " . .	175 10 0		341 10 0
Miscellaneous "	80 12 6		165 0 0
Boarded "	313 17 6		412 10 0
Seed "	22 10 0		32 10 0
Uncovered Ground	265 8 8		339 3 5
Catalogue Fees	59 12 0		90 0 6
Entry Fees	55 0 0		78 10 0
		1,269 15 8	1,914 18 11
Carried forward .	£	2,975 17 10	

Southern Counties Society.

1913, WITH COMPARATIVE STATEMENT FOR 1912. Cr.

PAYMENTS.	1913. Truro. £	s.	d.	£	s.	d.	1912. Bath. £	s.	d.
SALARIES:—									
Secretary (including Clerks, Show Expenses, &c.)	1,050	0	0				1,050	0	0
Auditor	20	0	0				20	0	0
Consulting Chemist	30	0	0				30	0	0
				1,100	0	0	1,100	0	0
MISCELLANEOUS:—									
Printing	14	1	10				12	10	9
Stationery and Finance Books	37	15	5				41	7	10
Postages, Telegrams, Cheque and Receipt Stamps	62	7	9				63	18	4
Ground Rent and Rates	20	19	4				21	5	0
Income and Property Tax	2	3	9				2	3	9
Travelling Expenses	34	9	10				23	7	8
Carriage of Goods	8	16	1				7	11	3
Directories and Reference Books	1	5	7				0	12	7
Subscriptions	6	6	0				6	6	0
Repairs and Fittings	15	15	5				9	15	6
Hire of London Rooms for Meetings	3	3	0				3	3	0
Fuel and Light	7	17	6				10	6	5
Finance Committee's Expenses	2	11	5				3	1	6
Telephone	8	13	8				8	16	2
Presentation							16	9	0
				226	6	7	230	14	9
JOURNAL:—									
Editor	100	0	0				100	0	0
Associate Editor	100	0	0				100	0	0
Printing and Binding	146	5	9				148	16	3
Plans and Blocks	10	15	0				11	10	6
Journal Distribution	18	10	10				19	4	10
Postages, Stationery, Reference Books, &c.	4	9	0				4	14	4
Payments to Authors	26	18	0				36	5	0
				406	18	7	420	10	11
IMPLEMENTS:—									
Shedding	394	0	5				568	7	8
Stewards and Assistants	60	8	5				54	1	8
Printing, Stationery, &c.	20	16	9				25	1	7
Fees returned							3	16	0
				475	5	7	651	6	11
Carried forward				£ 2,208	10	9			

DR. CASH ACCOUNT—*continued.*

RECEIPTS.	£ s. d.	1913. Truro. £ s. d.	1913. Truro. £ s. d.	1912. Bath. £ s. d.
Brought forward .			2,975 17 10	
HORSES, CATTLE, SHEEP AND PIGS :—				
Horses :—Entry Fees . .	199 15 0			258 0 0
Fines . .	2 0 0			4 10 0
Grand Stand Admissions	558 12 6			333 19 0
Special Prizes .	120 10 0			158 0 0
		875 17 6		754 9 0
Cattle, Sheep and Pigs :—				
Entry Fees . .	537 10 0			594 10 0
Fines . . .	17 0 0			30 0 0
Special Prizes .	358 0 0			437 17 0
		912 10 0		1,062 7 0
Catalogues, Manure and Fodder . .		108 7 9		104 19 5
			1,896 15 3	1,921 15 5
POULTRY :—				
Entry Fees		73 19 0		87 4 0
Commission on Sales		1 2 7		1 8 8
			75 1 7	88 12 8
Carried forward .		£	4,947 14 8	

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.		1913. Truro.		1912. Bath.
		£ s. d.	£ s. d.	£ s. d.
Brought forward			2,208 10 9	
HORSES, CATTLE, SHEEP AND PIGS :—	£ s. d.			
Horses—Prizes	795 3 0			798 2 0
Shedding & Grand Stand	358 16 1			302 13 2
Stewards and Assistants	61 0 2			43 10 9
Judges	41 18 6			35 4 4
Fees returned				1 10 0
		1,256 17 9		1,181 0 3
Cattle—Prizes £1,015 12 0				1,148 7 0
Less Deferred 2 0 0				15 0 0
	1,013 12 0			1,133 7 0
Sheep—Prizes	552 5 0			571 0 0
Pigs—Prizes	204 2 10			206 4 0
Shedding and Canvas	426 13 4			396 3 0
Stewards and Assistants	36 3 9			35 12 0
Judges	179 15 0			170 5 5
Fees Returned	1 0 0			1 10 0
		2,413 11 11		2,514 1 5
Buildings, etc.	258 2 9			303 9 4
Fodder and Insurance	225 18 9			247 12 1
Fodder Assistants	8 18 3			7 10 0
Veterinary Inspector	27 17 2			26 18 6
Rosettes	12 14 4			12 15 10
Printing and Stationery	39 16 11			45 18 3
Refreshments to Judges	6 14 4			14 15 6
		580 2 6		658 19 6
			4,250 12 2	4,354 1 2
POULTRY :—				
Prizes		146 0 0		156 1 0
Marquee, Staging and Sheds		46 9 7		48 3 5
Steward and Assistants		25 15 7		23 9 6
Judges		16 13 6		13 10 0
Printing, Stationery, Cartage, &c.		11 10 5		18 4 1
			246 9 1	254 8 0
Carried forward		£	6,705 12 0	

Dr.

CASH ACCOUNT—*continued.*

RECEIPTS.				1913. Truro.			1912. Bath.		
	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward .				4,947	14	8			
SHOEING :—									
Entry Fees				21	10	0	31	0	0
ART-MANUFACTURES :—									
Fees for Space				29	8	0	107	2	0
Carried forward .			£	4,998	12	8			

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.	1913. Truro.		1912. Bath.
	£ s. d.	£ s. d.	£ s. d.
Brought forward .		6,705 12 0	
SHOEING :—			
Prizes	34 10 0		38 10 0
Judges	12 16 6		9 1 0
Anvils, Forges, Coals, Horses, Printing, etc. .	12 5 7		12 19 0
Shedding	38 7 9		34 0 0
Steward and Assistant	18 4 0		11 3 3
Fees returned	10 11 10		15 7 8
Exhibition of Models	15 0 0		
		141 15 8	121 0 11
ART-MANUFACTURES :—			
Labour and Fittings	72 7 2		57 18 11
Steward and Assistants, Printing, etc. .	6 1 7		1 10 6
		78 8 9	59 9 5
NATURE STUDY :—			
Labour and Fittings	68 13 3		35 11 8
Steward and Assistants	6 1 0		5 0 2
Printing, Postage, etc.	1 4 0		1 17 0
		75 18 3	42 8 10
FORESTRY :—			
Prizes	7 0 0		6 11 0
Labour and Fittings	66 19 10		45 0 2
Steward and Assistants	14 0 0		7 3 0
Printing, Postage, etc.	2 8 6		1 5 6
Judge and Demonstrator	5 10 6		6 12 3
		95 18 10	66 11 11
MUSIC :—			
Bands and their Fares	226 0 0		212 0 0
Steward and Assistants	4 16 0		3 10 2
Erecting Band Stand, etc.	27 9 1		25 9 4
		258 5 1	240 19 6
HORTICULTURE :—			
Gratuities to Gardeners	108 0 0		100 0 0
Erecting and Repairing Tent and Staging .	41 6 0		35 12 1
Steward and Assistants	14 14 5		16 6 0
		164 0 5	151 18 1
Carried forward . .	£	7,519 10 0	

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.		1913. Truro.		1912. Bath.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Brought forward .			4,998 12 8	
CHEESE AND BUTTER:—				
Entry Fees		53 5 0		65 13 0
Sales		13 7 5		17 0 3
Special Prizes and Fines		11 10 0		38 0 0
			78 2 5	120 13 3
WORKING DAIRY:—				
Admissions		12 12 3		4 17 9
Entry Fees, Competitions .	81 15 0			44 12 6
" Appliances . .	6 6 0			5 5 0
" Tests . . .	13 0 0			13 0 0
		101 1 0		62 17 6
Sale Premium		5 1 0		40 0 0
Special Prizes		65 12 0		26 0 0
			184 6 3	133 15 3
CIDER:—				
Entry Fees, Fines, etc.			11 7 6	12 17 6
Carried forward		£	5,272 8 10	

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.	1913. Truro. £ s. d.	1913. Truro. £ s. d.	1912 Bath. £ s. d.
Brought forward		7,519 19 0	
CHEESE AND BUTTER:—			
Prizes	145 10 0		177 10 0
Judges	14 18 9		10 11 10
Stewards and Assistants	13 9 5		8 10 2
Shedding	53 1 1		44 4 9
Printing, Stationery, Carriage, &c.	2 13 9		3 8 0
Grass Table and Tiles for Butter	7 3 3		5 0 0
		236 16 3	249 4 9
WORKING DAIRY:—			
Prizes	76 7 6		70 5 0
Stewards and Assistants	71 4 6		33 12 2
Judges and Demonstrators	90 1 5		87 8 10
Buildings	221 11 8		187 17 10
Printing, Stationery, Postages and Insurance	9 13 1		6 3 6
Utensils, Carriage, Cows for Milking, &c.	63 13 9		31 9 5
Coal, Salt, Ice, &c.	8 7 9		5 19 3
Consulting Chemist for Analyses and travelling expenses	13 3 6		11 0 2
		554 3 2	433 16 2
CIDER:—			
Prizes	26 11 0		20 0 0
Shedding and Fittings	29 14 10		20 14 9
Steward and Assistants	22 6 2		12 4 4
Judge	5 13 7		5 8 9
Analyses, Carriage, Printing, &c.	16 2 6		17 5 6
		100 8 1	75 13 4
Carried forward	£	8,411 6 6	

DR.

CASH ACCOUNT—*continued.*

RECEIPTS.	1913. Truro.						1912. Bath.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Brought forward .				5,272	8	10			
ADMISSIONS TO SHOW-YARD:—									
Admissions at 2*s.* 6*d.*	1,326	2	6				1,571	10	0
" " 1*s.*	2,042	11	0				1,868	14	0
" " 6*d.* and 3*d.*	108	17	0				112	12	0
Season Tickets, etc.	380	0	0				48	7	6
				3,857	10	6	3,601	3	6
SHOW (UNAPPORTIONABLE):—									
Sales, Fittings, etc.	415	13	3				530	3	8
Contract Premiums	496	12	0				560	15	0
Sale of Permanent Buildings							98	19	0
				912	5	3	1,189	17	8
SUBSCRIPTIONS FROM TOWNS:—									
Swansea, for 1914 Show				800	0	0	800	0	0
Carried forward			£	10,842	4	7			

CASH ACCOUNT—*continued*. CR.

PAYMENTS.	1913. Truro. £ s. d.	1913. Truro. £ s. d.	1912. Bath. £ s. d.
Brought forward .		8,411 6 6	
PUBLIC ANNOUNCEMENTS:—			
Advertising	176 16 2		201 18 9
Billposting.	124 0 0		133 15 0
Railway Placards	47 0 0		65 5 0
Printing	34 7 1		49 10 11
		382 3 3	450 9 8
SHOW (UNAPPORTIONABLE): –			
Official Buildings, &c.	1,106 3 2		909 8 8
Hoarding	270 13 10		235 3 1
Carriage of Plant	111 15 9		107 19 3
Works Assistant.	6 19 10		7 14 0
Stand Fittings	174 9 3		281 12 0
Insurance	14 16 6		12 8 3
Furnishing Official Buildings	19 2 8		28 12 3
Mess Room, Allotment Expenses, &c. . . .	10 4 6		18 18 0
Gatekeepers, Yardmen, Messengers, &c. . .	95 17 10		80 5 1
Stewards of Finance and Treasurer . .	20 9 5		24 15 10
Finance Office and Treasurer's Clerks . .	39 13 7		34 13 0
Police	93 12 6		91 0 0
Ditto (1912)	12 0 0		
Badges, &c.	4 3 1		2 19 4
Catalogues for Press and Officials . .	7 1 0		7 18 6
Purchase of Plant	14 5 6		40 7 3
Commission on Sale of Tickets, Printing, Stationery, &c.	48 13 11		24 9 2
Extension of Telegraph Wires	11 6 6		9 6 3
Bath Abbey Organ Fund			21 0 0
Sheep Dog Demonstrations			13 15 10
		2,061 8 10	1,952 5 9
Carried forward .	£	10,854 18 7	

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.				1913. Truro.			1912. Bath.		
	£	s.	d.	£	s.	d.	£	s.	d
Brought forward .				10,842	4	7			
				10,842	4	7	11,641	14	10
Balance in Bank, Jan. 1st . .				406	9	5	1,320	17	2
				£ 11,248	14	0	12,962	12	0

CASH ACCOUNT—*continued.* Cr.

PAYMENTS.	1913. Truro. £	s.	d.	£	s.	d.	1912. Bath. £	s.	d.
Brought forward .				10,854	18	7			
EXPERIMENTS :—									
National Fruit and Cider Institute .				100	0	0	125	0	0
				10,954	18	7	10,980	0	1
INVESTMENTS							1,576	2	6
Balance in Bank, Dec. 31st . .				293	15	5	406	9	5
				£ 11,248	14	0	12,962	12	0

Jan. 19*th* 1914

I hereby certify that I have examined the foregoing accounts for the year ending December 31st, 1913, compared the payments entered with the vouchers, and found them all in order and correct.

F. CLIFFORD GOODMAN, F.C.A.,
Auditor.

Passed by Council,
Jan. 27*th*, 1914,
THOS. F. PLOWMAN,
Secretary.

ASSETS AND LIABILITIES ACCOUNT TO DECEMBER 31st, 1913, WITH COMPARISON FOR 1912.

ASSETS.		1913. Truro. £ s. d.	1912 Bath. £ s. d.
INVESTMENTS		16,828 3 1	17,713 8 4

	Par. Value. £ s. d.	Actual Cost £ s. d.	Market Value on Dec. 31. £ s d.
New Zealand Stock	1,568 1 6	1,500 0 0	1,379 18 1
Consols	5,841 17 11	5,809 19 6	4,191 11 2
India „	7,538 15 1	7,277 5 1	5,427 18 1
Queensland „	2,751 9 0	3,000 0 0	2,696 8 5
N. S. Wales „	1,752 8 10	2,000 0 0	1,699 17 4
Canadian Pacific Rly.	1,500 0 0	1,576 2 6	1,432 10 0
	20,952 12 4	21,163 7 1	16,828 3 1

ASSETS.	£ s. d.	1913. Truro. £ s. d.	1912 Bath. £ s. d.
CASH ON DEPOSIT		1,000 0 0	1,000 0 0
PLANT:—			
Works	183 8 10		189 11 0
Dairy	20 19 3		23 5 9
		204 8 1	212 16 9
HOUSE PROPERTY	633 10 7		633 10 7
FURNITURE AND FITTINGS	170 11 11		174 19 4
		804 2 6	808 9 11
SUBSCRIPTION ARREARS		69 18 0	55 9 0
BALANCE IN BANK		18,906 11 8 293 15 5	19,790 4 0 406 9 5
		£ 19,200 7 1	20,196 13 5

LIABILITIES.	1913. Truro. £ s. d.	1912. Bath. £ s. d.
DEFERRED PRIZES	2 0 0	15 0 0
SWANSEA MEETING	800 0 0	800 0 0
JOURNAL, cost of, estimated at	450 0 0	450 0 0
BALANCE	1,252 0 0 17,948 7 1	1,265 0 0 18,931 13 5
	£ 19,200 7 1	20,196 13 5

January 19th, 1914.
Audited and found correct,
F. CLIFFORD GOODMAN, F.C.A., Auditor.

Passed by Council,
January 27th, 1914.
THOS F. PLOWMAN, Secretary.

Bath and West and Southern Counties Society.

STATEMENT SHOWING FINANCIAL RESULT OF THE TRURO (1913) SHOW.

Printed Financial Statements. Page		£	s.	d.	£	s.	d.	£	s.	d.
cxlii	Show Receipts							9,136	2	5
cxliii	Show Payments				9,121	13	5			
clvi	Deferred Prizes				2	0	0			
					9,123	13	5			
cliii	Less 1912 Police Account paid in 1913 . .				12	0	0			
					9,111	13	5			
cliii	Less Show Plant purchased . .	14	5	6						
	Less 10 per cent. for depreciation .	1	8	6						
					12	17	0			
								9,098	16	5
	Net profit . . .							37	6	0

Bath and West and Southern Counties Society,

FOR THE

Encouragement of Agriculture, Arts, Manufactures and Commerce.

List of Members, 1914.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT

FOR 1913-1914.

SIR J. T. D. LLEWELYN, BART.

TRUSTEES.

THE MOST HON. THE MARQUIS OF BATH.
SIR C. T. D. ACLAND, BART.
C. L. F. EDWARDS, ESQ.

Names thus (*) distinguished are Governors.
Names thus (†) distinguished are Life Members.
⁂ *Members are particularly requested to make the Secretary acquainted with any errors in the names of residences.*

Name.	Residence.	Subscriptions. £	s.	d.
†*His Most Gracious Majesty the King	Windsor Castle		..	
†Ackers, B. St. John . .	Huntley Manor, Huntley, near Gloucester		..	
Ackers, Chas. P. . .	Huntley Manor, Gloucester . .	1	0	0
Ackland, J. . . .	Cutton Farm, Poltimore, Exeter .	1	0	0
Acland, Alfred Dyke . .	5, Cheyne Place, London, S.W. .	1	0	0
†Acland, Rt. Hon. A. H. Dyke	29, St. James' Court, Buckingham Gate, London, S.W. . .		..	
*Acland, Sir C. T. D., Bart.	Killerton, Exeter . . .	5	0	0
Acland, F. Dyke, M.P. .	. . . .	1	0	0
Adams, E. C. . . .	Brentwood, Combe Down, Bath .	1	0	0
Adams, G. & Son . .	Wadley House, Faringdon, Berks	1	0	0
Adams, R. and H. (Ld.) .	10, Queen Square, Bristol . .	1	0	0
Adeane, C. R. W. . .	Babraham, Cambridge . . .	1	0	0
†Aitken, G. H. . . .	Longleat Estate Office, Warminster		..	
Akers, E.	St. Fagans, Cardiff . . .	1	0	0

Name.	Residence.	Sub-scriptions. £	s.	d.
Alexander, D.	Cardiff	1	1	0
Alexander, H. G.	Dinas Powis, Cardiff	1	1	0
Allen, A.	Stoney Stratton, Evercreech, Bath	1	0	0
†Allen, James D.	Springfield House, Shepton Mallet		..	
Allen, W. T.	West Bradley, Glastonbury	1	0	0
Allin, Mrs. N.	Townsend Manor Farm, Over Wallop, Stockbridge	1	0	0
Allix, C. I. L.	St. Germans, Cornwall	1	0	0
Allsebrook, A.	Link Elm, Malvern Link	1	1	0
Ames, E.	Circus Mews, Bath	1	0	0
Ames, F.	Hawford Lodge, Worcester	1	0	0
Andrews, S. Fox	Union Street, Bath	1	0	0
Anglo-Continental Guano Works	Dock House, Billiter Street, E.C.	1	0	0
Anglo-Swiss Condensed Milk Company	Chippenham	1	0	0
†Ashcomb, Lord	Denbies, Dorking		..	
†Ashcroft, W.	13, The Waldrons, Croydon		..	
Ashford, E. C., M.D.	The Moorlands, Bath	1	0	0
*Astor, Waldorf	Cliveden, Taplow, Bucks	2	0	0
Augustein, J. R.	Holbrook House, Wincanton	1	0	0
Aungier, J.	Lynwick, Rudgwick	1	0	0
†Avebury, Lord	High Elms, Hayes, Kent		..	
†Aveling, Thomas L.	Rochester		..	
Avent, F. H.	Metal Exchange Buildings, Swansea	1	0	0
Avon Manure Company (Ld.)	St. Philip's Marsh, Bristol	1	0	0
Badcock, H. Jefferies	Broadlands, Taunton	1	0	0
Bainbridge, Mrs. R. C.	Elfordleigh, Plympton, South Devon	1	0	0
Baker, G. E. Lloyd	Hardwicke Court, nr. Gloucester	1	0	0
†Baker, M. G. Lloyd	The Cottage, Hardwicke, Glos.		..	
†Baker, L. J.	10, Ennismore Gardens, London, S.W.		..	
*Balston, W. E.	Barvin, Potters Bar, Herts	2	0	0
Bamfords (Ltd.)	Uttoxeter	1	0	0
*Bannatyne, J. F.	Haldon, Exeter	2	2	0
Barford and Perkins (Ltd.)	Peterborough	1	0	0
Barham, G. T.	Sudbury Park, Wembley, Middlesex	1	0	0
Baring, Hon. A. H.	The Grange, Alresford, Hants	1	0	0
Barker, Sir J., Bart.	The Grange, Bishops Stortford	1	0	0
*Barker-Hahlo, H.	Camerton Court, Bath	2	0	0
Barlow, Sir J. Emmott, Bart., M.P.	Torkington Lodge, Hazel Grove, near Stockport	1	0	0
Barrett, Major William	Moreden, North Curry, Taunton	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Barrett, Col. W.	Moreden, Taunton	1	0	0
Barstow, J. J. J.	The Lodge, Weston-super-Mare	1	1	0
Barton, D. J.	Quinceboro' Farm, Widemouth Bay, Bude, N. Cornwall	0	10	0
Bassett, A. F.	Tehidy, Camborne, Cornwall	1	0	0
*†Bath, Marquis of	Longleat, Warminster		..	
Bath and Somersetshire Dairy Co. (Ltd.)	Bath	1	0	0
Bath and Wells, The Bishop of	The Palace, Wells	1	1	0
Bath Gas Company	Bath	1	0	0
†Bathurst, C., M.P.	Lydney Park, Glos.		..	
Batten, Col. Cary	Abbotsleigh, Bristol	1	0	0
Batten-Pooll, R. H.	Road Manor, Bath	1	0	0
†Battishill, W. J.	Spreyton, Exeter		..	
†Baxendale, J. Noel	Froxfield Green, Petersfield		..	
Bayley, J.	Highlands, Ivybridge, S. Devon	1	0	0
Beauchamp, E. B.	Trevince, Redruth	1	0	0
Beauchamp, F. B.	Woodborough House, Peasedown St. John, Bath	1	1	0
*Beaufort, Duke of	Badminton, Chippenham	2	2	0
Beaufoy, M. H.	Coombe Priory, Shaftesbury	1	0	0
Bennett, Brothers	*Journal* Office, Salisbury	1	1	0
Bennett, R. A.	Thornbury, Glos.	1	0	0
Bennetts, J. M.	Killaganoon, St. Feock, Cornwall	1	1	0
Bentall, Edward H. & Co.	Heybridge, Maldon, Essex	1	0	0
Benyon, H. A.	Englefield House, Reading	1	1	0
*Benyon, J. Herbert	Englefield House, Reading	5	0	0
Berryman, F. H.	Field House, Shepton Mallet	1	1	0
Best, Capt. T. G.	East Carleton Manor, Norwich	1	0	0
†Best, Capt. W.	Vivod, Llangollen, North Wales		..	
Best, J. W.	Charlton House, Ludwell, Salisbury	1	0	0
Beynon, J. W.	16, Mount Stuart Square, Cardiff	1	1	0
Birmingham, C.	Holnicote, near Minehead	0	10	0
†Blackburn, H. P.	Donhead Hall, Salisbury		..	
Blackstone & Co. (Ltd.)	Rutland Iron Works, Stamford	1	1	0
Blake, Col. M. Lock	Bridge, S. Petherton	1	0	0
Blathwayt, R. W.	Dyrham Park, Chippenham	1	1	0
Blinman & Miles	Farrington Gurney, Bristol	1	0	0
Board, R. J.	Skinner, Board & Co., Rupert St., Bristol	1	0	0
Bolden, Rev. C.	Preston Bissett, Buckingham	1	0	0
Bolitho, R. F.	Ponsandane, Penzance	1	1	0
Bolitho, T. B.	Trewidden, Penzance	1	0	0
Bolitho, T. R.	Trengwainton, Heamoor, Cornwall	1	1	0
Bond, E. (W. Evans & Co.)	Hele, Cullompton	1	0	0
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Boscawen, Hon. John R. de C.	Tregye, Perranwell, Cornwall	1	1	0
Boscawen, Townshend E.	2, Old Burlington St., London, W.	1	0	0
Bouverie, Hon. Mrs. Pleydell	Coleshill, Highworth, Wilts	1	1	0
Bouverie, H. P.	Brymore, Bridgwater	1	0	0
†Bowen-Jones, Sir J., Bart.	Council House Court, Shrewsbury		..	
†Bowerman, Alfred	Capton, Williton, Somerset		..	
Boyle, M.	The Manor, Steeple Fitzpaine, Taunton	1	0	0
Braby, F. & Co.	Ashton Gate Works, Bristol	1	0	0
Bradford, F.	Lilleshall, Swansea	1	0	0
Bradford, Thomas & Co.	Salford, Manchester	1	0	0
Brand, Admiral Hon. T. S.	Glynde, Lewes, Sussex	1	0	0
†Brassey, A.	Heythrop, Chipping Norton		..	
*†Brassey, H. L. C.	Apethorpe Hall, Wansford, Northants		..	
Bridges, J. H.	Ewell Court, near Epsom	1	1	0
†Brinkley, Rev. W. F. B.	The Vicarage, Abbots Leigh, Bristol		..	
Bristol Times and Mirror, Proprietors of	Bristol	1	0	0
Bristol Wagon and Carriage Works Co. (Ltd.)	Lawrence Hill, Bristol	1	1	0
Britten, Forester	Kenswick Manor, Worcester	1	0	0
†Broadmead, W. B.	Enmore Park, Bridgwater		..	
†Brocklehurst, H. D.	Sudeley Castle, Winchcombe		..	
Brockman, F. D.	Beach Borough, Hythe, Kent	1	0	0
Broderip, E.	Cossington, Somerset	1	0	0
Brown, F. E.	1,403 Neath Road, Swansea	1	0	0
Browning, Albert, M.A.	The Homestead, Combe Park, Bath	1	1	0
Bruford, R.	Nerrols, Taunton	1	0	0
†Buckingham, Rev. Preb.	The Rectory, Doddiscombsleigh, Dunsford, Devon		..	
Buck, D.	White House, Little Mill, Pontypool	1	0	0
Buckley, W.	Moundsmere Manor, Basingstoke	1	0	0
Budd, Felix S.	Clarendon House, Stow Park, Newport, Mon.	1	0	0
Budd, J. E.	Tidebrook Manor, Wadhurst, Sussex	1	0	0
Burghclere, Lord	48, Charles Street, London, W.	1	0	0
Burnard, R.	Cattedown, Plymouth	1	0	0
Burrell, C. and Sons	St. Nicholas Works, Thetford	1	0	0
†Burrell, Sir C. R., Bart.	Knepp Castle, Sussex		..	
Burton, J. H., M.Sc.	County Education Office, Weston-super-Mare	1	1	0
†Bush, H. G.	Old Manor House, Keynsham		..	
Bush, Mrs. L. E.	St. Mary's, Atlantic Road South, Weston-s-Mare	1	1	0
Buswell, C. and W.	Torquay	1	0	0
*Bute, The Marquis of	The Castle, Cardiff	2	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Butland, Bros.	Leigham, Plympton	1	0	0
Butler, I.	Panteg House, near Newport, Mon.	1	0	0
Butters, G.	Hill House, Newton, Leominster	1	0	0
Butterworth, R. W.	21, St. James's Square, Bath	1	0	0
Byng, Col. Hon. C.	Deerhurst, Lyndhurst, Hants	1	1	0
Cadogan, Earl, K.G.	Culford, Bury St. Edmunds	1	1	0
Cæsar, H. and J.	Knutsford, Cheshire	1	0	0
Calmady, Hamlyn, Miss S.	Bidlake Vean, Bridestowe, North Devon	1	0	0
Campbell, J.	93, Mansel Street, Swansea	1	0	0
Candy, T. C.	Woolcombe, Cattistock, Dorset	1	0	0
Carew, C.	Collipriest, Tiverton	1	0	0
Carnarvon, Earl of	Highclere Castle, Newbury	1	1	0
*Carr, Jonathan	Wood House, Twerton-on-Avon, Bath	2	2	0
Carr, Richardson	Estate Office, Tring Park, Herts	1	0	0
†Carruthers W., F.R.S.	14, Vermont Road, Norwood, London, S.E.		..	
†Carter, E.	East Upton, Ryde, Isle of Wight		..	
Carter, G. V.	Waterston Manor, Dorchester	1	1	0
Carter, J. & Co.	238, High Holborn, London	1	0	0
Cartwright, T. G.	30, Beaufort Gardens, London, S.W.	1	0	0
Carver, H. R.	West House, Chilton Polden, Bridgwater	1	0	0
Cary, Edmund	Pylle, Shepton Mallet	0	10	0
†Cary, John	The Priory, Shepton Mallet		..	
†Cary, W. H.	Steeple Ashton Manor, Trowbridge		..	
Cascajo, J.	Fair View, Dinas Powis, Cardiff	1	0	0
Cattybrook Brick Co. (Ltd.)	Baldwin Street, Bristol	1	0	0
Cave, Sir C., Bart.	Lidbury Manor, Sidmouth	1	0	0
Cave, C. H.	Rodway Hill House, Mangotsfield, Bristol	1	0	0
Cazalet, W. M.	Fairlawne, Tonbridge	1	0	0
Cecil, Lord A.	The Mount, Lymington, Hants	1	0	0
Chadwyck-Healey, Sir C. E. H., K.C.B., K.C.	Wyphurst, Cranleigh	1	1	0
Chapman, W. W.	Mowbray House, Norfolk Street, Strand, London, W.C.	1	1	0
Charles, W.	1, Royal Crescent, Bath	1	0	0
Chetwynd, Viscount	Wyndthorpe, near Doncaster	1	0	0
Chichester, C. Hamlyn	Bradiford House, Barnstaple, N. Devon	1	0	0

Name.	Residence.	£	s.	d.
†Chick, J. H.	Wynford Eagle, Maiden Newton, Dorset	..		
†Chick, W. D.	Compton Valence, Dorchester	..		
Childs, C., M.D.	Boscarn, Looe, R.S.O., Cornwall	1	0	0
Christie, A. L.	Tapeley Park, Instow, N. Devon	1	1	0
Churchill, The Viscount, G.C.V.O.	Carlton Club, Pall Mall, London	1	0	0
†Churchward, F.	Hill House, Stoke Gabriel, near Totnes	..		
*Clarendon, Earl of	The Grove, Watford	2	2	0
Clark, H. A.	Hinton Field, Hinton Charterhouse, Bath	1	0	0
†Clark, J. J.	Goldstone Farm, Hove, Sussex, (Hon. Local Sec., 1885)	..		
Clark, W. S.	Street, Glastonbury	1	0	0
Clark, W. H.	Rutland Cottage, Combe Down, Bath	1	1	0
Clarke, J. B.	Overleigh House, Street, Somerset	1	0	0
Clerk, Lieut.-Col. R. M.	Charlton House, Shepton Mallet	1	0	0
*Clifden, Viscount	Lanhydroc, Bodmin	2	0	0
*Clifford, Lord	Ugbrook, Chudleigh	2	2	0
Clinton, Lord	Heanton Satchville, Dolton, N. Devon	1	0	0
Clutton, R. W.	Hartswood, Reigate	1	0	0
Coaker, J.	Blagdon Barton, Paignton, Devon	1	0	0
Cobb, H. M.	Higham, Rochester	1	0	0
Cobb, R.	Larkin Hall, near Rochester	1	0	0
Coleridge, Hon. G.	Clophill, Ampthill, Beds.	1	0	0
Coles, C.	Manor House, Winterbourne Stoke, Salisbury	1	0	0
Collins, D.	Newton Ferrers, Callington, Cornwall	1	1	0
Collins, J. S.	St. George's Lodge, Oldfield Road, Bath	1	1	0
Colman, Sir J., Bart.	Gatton Park, Surrey	1	0	0
Colmer, Jas. (Ltd.)	Union Street, Bath	1	0	0
*Colston, E.	Roundway Park, Devizes	2	2	0
Colthurst, Symons & Co., (Ltd.)	Bridgwater	1	0	0
Colville, H. K.	Loders Court, Bridport	1	0	0
Cook, R.	Crazelowman, Tiverton	1	0	0
†Cookson, H. T.	Sturford Mead, Warminster	..		
Cooling, G. and Sons	Northgate Street, Bath	1	1	0
Cope, W.	Southerndown, Glam.	1	1	0
Corbett, E. W. M.	Bute Estate Office, Cardiff	1	1	0
Corbett, Thomas	Perseverance Iron Works, Shrewsbury	1	0	0
Corfield, W. R.	St. Lawrence, Chepstow	1	0	0
Corker & Bevan	Swansea	1	1	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d
†Cork and Orrery, The Earl of	22, Ryder Street, London, S.W.		..	
†Corner, H. W.	Manor House, Inglescombe, Bath		..	
†Cornwallis, F. S. W.	Linton Park, Maidstone		..	
Cory, Sir Clifford	Llantarnam Abbey, Mon.	1	0	0
Cotgrave, H. F.	The Grange, Banwell, Somerset	1	0	0
†Cotterell, Sir J. R. G., Bart.	Garnons, Hereford		..	
Coultas, J. R.	Perseverance Iron Works, Grantham	1	0	0
†Courage, Raymond	Shenfield Place, Brentwood, Essex		..	
†Coussmaker, Lt.-Col. G.	Westwood, Normandy, Guildford, Surrey		..	
*Coventry, The Earl of	Croome Court, Severn Stoke, Worcestershire	2	0	0
Cox, B.	Pwlpen Farm, Christchurch, Newport, Mon.	0	10	0
Cox & Sons	47, City Road, Cardiff	1	0	0
Crawshay, W. T.	Caversham Park, Reading	1	0	0
Crewdson, J. D.	Syde, near Cheltenham	1	0	0
Crick, Thomas	Great Ash, Winsford, Dulverton	0	10	0
Cridlan, J. J.	Maisemore Park, Gloucester	1	0	0
Crofts, D. J.	Sutton Montis, Sparkford, Bath	1	0	0
Crutchley, P. E..	Limminghill Lodge, Ascot	1	0	0
Cuming, A. P.	Moreton Hampstead, Devon	1	0	0
Cundall, H. M., I.S.O., F.S.A.	Richmond, Surrey	1	0	0
†Curre, E.	Itton Court, Chepstow		..	
Currie, L.	Minley Manor, Farnborough, Hants	1	0	0
Currie, W. C.	Seacombe, Liverpool	1	0	0
Custance, Mrs. M.	Woodlands, Southwater, Horsham	1	0	0

Dairy Supply Company (Ltd.)	Museum St., Bloomsbury, London	1	0	0
Damerel and Son	161, Sidwell Street, Exeter	1	0	0
†Daniel, H. T.	The Red House, Cannington, Bridgwater		..	
Daniel, Thos. C.	Stuckeridge, Bampton, North Devon	1	1	0
Darby, A. E. W.	Little Ness, Shrewsbury	1	0	0
Darby, E.	Liscombe, Dulverton	1	0	0
†Darell, D.	Hillfield House, Stoke Fleming, near Dartmouth		..	
†Davenport, Rev. Geo. H.	Foxley, Hereford		..	
†Davey, J. Sydney	Brockym, Cury - Cross - Lanes, Cornwall		..	

Name.	Residence.	Subscriptions.		
		£	s.	d.
Davey, Sleep, & Co. (Ltd.)	Excelsior Plough Works, Plymouth	1	0	0
David & David	Old Bank Chambers, 27, High Street, Cardiff	1	0	0
Davie, Sir W. A. F., Bart., C.B.	Creedy Park, Crediton	1	0	0
Davies, D.	The Borough Stores, College Street, Swansea	1	1	0
Davies, E.	Machen House, near Newport, Mon.	1	0	0
Davis, Col.	Salt Hill House, near Slough	1	0	0
Davis, F. L.	7, Bute Crescent, Cardiff	1	1	0
†Davis, H. J.	Sutton Montis, Sparkford, S.O., Somerset		..	
Davis & Co.	75, George Street, Oxford	1	0	0
Davis, Prof. J. R. Ainsworth, M.A.	Principal, Royal Agricultural College, Cirencester	1	0	0
†Davy, W.	Tracy Park, Bristol		..	
Daw, J. E.	Exeter	1	1	0
Dawson, W. and F.	Market Place, Bath	1	0	0
Day and Sons (Ltd.)	Crewe	1	0	0
Day, John	Huxham, E. Pennard, Shepton Mallet	1	0	0
†Deacon, W. S.	Poynters, Cobham, Surrey		..	
De Bertodano, B.	Cowbridge House, Malmesbury	1	0	0
De Blaquiere, Lord	3, The Circus, Bath	1	0	0
De Hamel, E.	Middleton Hall, Tamworth	1	0	0
De Knoop, J.	Calveley Hall, Tarporley	1	0	0
De Weyer, Col. Victor Bates Van	New Lodge, Winkfield, Windsor	1	1	0
Demuth, R. H.		1	0	0
Dening, C. & Co.	Chard, Somerset	1	0	0
Dennis, S.	Latton, Cricklade, Wilts	1	0	0
Denny, G. A.	Yarsop, Hereford	1	0	0
†Devas, H. G.	Hartfield, Hayes, Kent		..	
*Devon, The Earl of	Powderham Castle, Devon	2	0	0
*Devonshire, Duke of	Chatsworth, Derbyshire	5	0	0
Dew, W. S.	Newton St. Loe, Bristol	1	0	0
Dickinson, R. E.	65, South Audley Street, Mayfair, London, W.	1	1	0
Dickinson, W.	Kingweston, Somerton	1	1	0
Dickson and Robinson	Cathedral Street, Manchester	1	1	0
Dickson's (Ltd.)	Chester	1	1	0
†Digby, Lord	Minterne, Cerne Abbas		..	
Digby, F. J. B. Wingfield	Sherborne	1	0	0
Dillwyn, R. M.	Trinity Place, Swansea	1	0	0
†Dobson, H. V.	Perridge House, Shepton Mallet		..	
Dodington, R. M.	Horsington Park, Templecombe	1	1	0
Dormer, Capt. C. W. C.	Rousham, Oxford	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Drummond, Col. F. D. W.	Cawdor Estate Office, Carmarthen	1	0	0
Drummond, H. W.	3, Bryanston Square, London, W.	1	0	0
*Ducie, Earl of	Tortworth Court, Falfield, R.S.O., Glos.	2	0	0
Dugdale, J. M.	Llwyn, Llanfyllin, near Oswestry	1	0	0
Duke, H.	Clandon, Dorchester	1	0	0
†Dunboyne, Lord	Greendale, Clyst St. Mary, Exeter		..	
Duncan, R.	Rhoose, near Barry	1	0	0
Duncombe, Col. W. H. O.	Waresley Park, St. Neots	1	1	0
Dunlop, I. M.	Avonhurst, Sneyd Park, Bristol	1	0	0
*Dunraven, Earl of	Dunraven Castle, Bridgend, Glam.	2	2	0
Dyer John	2, Richmond Villas, Swansea	1	0	0
*Dyke, Rt. Hon. Sir W. Hart, Bart.	Lullingstone Castle, Eynsford	2	2	0
Eagle Range and Gas Stove Company (Ltd.)	Catherine Street, Aston, Birmingham	1	0	0
Eastwood, A. C.	Leigh Court, Taunton	1	0	0
*†Eastwood, J. E.	Enton, Witley, Surrey		..	
Eavis, W. J.	Worthy Farm, Pilton, Shepton Mallet	1	0	0
Economic Fencing Company (Ltd.)	Billiter House, Billiter Street, London, E.C.	1	0	0
Eden, R. H. H.	Sherborne, Dorset	1	0	0
†Edgcumbe, Sir Robert Pearce	Dale Lodge, Sunningdale		..	
Edmonds, W.	Wiscombe Park, Colyton	1	0	0
†Edmondson, A.	Church Farm, Dry Sandford, Abingdon		..	
Edridge, Sir. F., Bart.	Addiscombe Court, Croydon	1	1	0
Edwards, A. P.	Hutton, Weston-super-Mare	1	1	0
Edwards, C. L. Fry	The Court, Axbridge, Somerset	1	0	0
Edwards, Mrs.	Haresfield, Mumbles, Glam.	1	0	0
Edwards, W.	Haresfield, Mumbles, Glam.	1	0	0
Edwards, W. H. G.	Butcombe Court, Wrington	1	0	0
Eldridge, Pope & Co.	Dorchester	1	0	0
Elliott, Sir Thomas H., Bart.	4, Whitehall Place, London, S. W.	1	1	0
Elloitt, T. M.	Biddestone, Chippenham	1	0	0
Elston, J.	Echo Villa, Batheaston, Bath	1	0	0
Elton, B. A.	Clevedon Court, Somerset	1	0	0
*Elton, Sir E., Bart.	Clevedon Court, Clevedon	2	2	0
Enfield, Viscount	Dancer's Hill, Barnet	1	0	0
Ensor, T. & Son	Auctioneers, Dorchester	1	0	0
Errington, R.	Victoria Mills, Sunderland	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Esdaile, C. E. T.	Cothelstone House, Taunton	1	0	0
Ettle, J., F.R.H.S.	37, Stanley Grove, Weston-super-Mare	1	1	0
Evans, H. M. Glynn	Plasissa, Llangennech, Carmarthenshire	1	0	0
†Evan-Thomas, Commander A.	Caerwnon, Builth Wells, R.S.O.		..	
†Eve, Mr. Justice	Pullabrook, Bovey Tracy, South Devon		..	
Evelyn, Mrs.	Wotton House, Nr. Dorking	1	0	0
*Falmouth, Viscount	Tregothnan, Probus	2	0	0
Fardoe, M.	Woodram Farm, Pitminster, Taunton	1	0	0
Farmer, A. W.	Barrack Farm, Newport, Mon.	1	0	0
†Farmer, S. W.	Little Bedwin, Wilts		..	
†Farwell, E. W.	11, Laura Place, Bath		..	
†Farwell, Right Hon. Sir Geo.	15, Southwell Gardens, London, S.W.		..	
Faudel-Phillips, H.	Mapleton Stud, Edenbridge, Kent	1	0	0
Fellowes, Right Hon. A. E.	Honingham, Norfolk	1	0	0
Fennell, E. and Sons	11, High Street, Newport, Mon.	1	0	0
Fenton, A. D.	Maristow, Roborough, S. Devon	0	10	0
Ferrand, G. F.	Morland Hall, Alton, Hants	1	0	0
Finlay, Col. Alexander	Little Brickhill, Bletchley, Bucks	1	0	0
Finn, L. & G.	Westwood Court, Faversham	1	0	0
Fisher, The Right Rev. Bishop, D.D.	Burgh House, Nr. Great Yarmouth, Norfolk	1	0	0
Fisher, Col. H. Oakdene	Ty Mynddi, Radyr, near Cardiff	1	0	0
*Fitzgerald, Sir Maurice, Bt.	Buckland Faringdon, Berks	2	0	0
*Fitzhardinge, Lord	Cranford House, Hounslow	2	0	0
Fleming, J. Willis	Stoneham Park, Eastleigh, Hants	1	0	0
Fletcher, E. E.	224, Oxford Street, Swansea	1	0	0
†Fletcher, Lionel J. W.	West Farleigh, Maidstone		..	
Flower, James	Chilmark, Salisbury	1	0	0
Flower, W. R.	West Stafford, Dorchester	1	0	0
Ford, W. A.	Eaton Grove, Swansea.	1	0	0
Forester, E. L.	Picketsmead, near Swansea	1	0	0
*†Forester, Capt. F. W.	Saxilbye Park, Melton Mowbray		..	
Forrest, Col. W.	St. Fagan's, Cardiff	1	0	0
Forster, J. C.	Clatford Mills, Andover	1	0	0
†Fortescue, J. B.	Boconnoc, Lostwithiel, Cornwall		..	
Fortt, A. H.	Hatfield House, Hatfield Place, Bath	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Foster-Harter, G. L.	Salperton Park, Compton Abdale, R.S.O., Glos.	1	0	0
Foster, W.	Mel Valley, Wake Green Road, Moseley	1	0	0
Four Oaks Spraying Machine Co. (Ltd.)	Four Oaks Works, Sutton Coldfield	1	1	0
Fowler & de la Perrelle	Porter's Lane, Southampton	1	0	0
†Fowler, G.	Claremont, Taunton		..	
Fowler, J. & Co. (Ltd.)	Leeds	1	0	0
Fownes, Col.	. . . .	1	0	0
Fox, Brothers & Co.	Wellington, Somerset	1	1	0
Fox, C. L.	Rumwell Hall, Taunton	1	0	0
Fox, Dr. A. E. W.	Kilkenny House, Sion Hill. Bath	1	1	0
Fox, Mrs. A.	Brislington House, near Bristol	1	0	0
†Fox, Robert	Grove Hill, Falmouth		..	
Foxcroft, C. T.	Hinton Charterhouse, Bath	1	1	0
*Fremlin, W. T.	Milgate Park, Maidstone	2	0	0
Frost, Adam E.	Kemeys, 53. Caeran Road, Newport, Mon.	1	0	0
Fry, A. M.	8, Sion House, Clifton, Bristol	1	1	0
Fry, H. A.	19, Monmouth Place, Bath	1	1	0
*Fry, J. F.	Ford Abbey, Chard	2	0	0
*Fry, J. S. & Sons (Ltd.)	Union Street, Bristol	2	2	0
Fuller, E. R.	Islay Lodge, Pulteney Road, Bath	1	0	0
†Fuller, G. Pargiter	Neston Park, Corsham		..	
*Fuller, Sir J. M., Bart.	Neston Park, Corsham	2	0	0
Fuller, S. and A.	Bath	1	0	0
Fursdon, E. S.	St. Martin's, Kingskerswell, Devon	1	1	0
Fyson & Co., (Ltd.)	Union Street, Bath	1	1	0
Gardiner, Sons & Co.	Nelson Street, Bristol	1	1	0
Garne, W.	Aldsworth, Northleach	1	1	0
Garne, W. T.	Aldsworth, Northleach	1	1	0
*Garratt, Lt.-Col. T. A. T.	Bishop's Court, Exeter	2	2	0
Garrett, W.	Backwell Hill House, West Town, R.S.O., Somerset	1	0	0
Garton, Jas.	Clarendon Park, Salisbury	1	0	0
Garton, T. R.	Warrington	1	0	0
Gear, W. H.	Bridge Street, Bath	1	1	0
*†George, William E., J.P.	Downside, Stoke Bishop, Bristol		..	
Gibbins, T.	Glenfelin, Neath	1	1	0
†Gibbons, B. G.	Sheephouse Farm, Camerton, Bath		..	
Gibbons, George	Tunley Farm, near Bath	1	0	0
†Gibbons, H.	Church Farm, Clutton, Bristol		..	

Name.	Residence.	Subscriptions. £	s.	d.
Gibbons, P., J.P.	Keynsham	1	1	0
Gibbs, A. H.	Pytte, Clyst St. George, Topsham, Devon	1	0	0
*†Gibbs, G. A., M.P.	Tyntesfield, Bristol	..		
†Gibbs, H. M.	Barrow Court, Flax Bourton, Bristol	..		
Gibson, J. T.	Claverham, near Yatton	1	1	0
Gilbert, C. D.	The Manor House, Eastbourne, Sussex	1	1	0
Gilbert, F. W. (Ltd.)	Swarkestone, Derby	1	1	0
Gilbey, Sir W., Bart.	Elsenham Hall, Essex	1	1	0
Gill, P. O.	Uplands, Wrington, Somerset	1	0	0
Gillingham, J. and Son	Prospect House, Chard	1	0	0
†Gladstone, J.	Bowden Park, Chippenham	..		
Glantawe, Lord	The Grange, Swansea	1	0	0
Glyn, R. F.	The Cross House, Fontnell Magna, Shaftesbury	1	0	0
*Glyn, Sir Richard G., Bart.	Gaunt's House, Wimborne	2	2	0
Godfrey, W. J.	Exmouth	1	1	0
†Godman, C. B.	Woldringfold, Horsham	..		
Godman, J.	The Raswell, Hascombe, Godalming	1	0	0
†Goldney, Sir Prior, Bart., C.B.	Derriads, Chippenham	..		
Gomer, W.	Killerton Estate Office, Broadclyst, Exeter	1	0	0
Goodden, J. R. P.	Compton House, Sherborne	1	0	0
Goodman, Sons, Pollard and Bruford	3, Hammet Street, Taunton, and Broad Street House, London, E.C.	1	0	0
Goodrop, A.	Wick Farm, Combe Hay, Bath	1	0	0
Gordon, G. H.	The Barn House, Sherborne	1	0	0
Gore-Langton, Hon. H. P.	Hatch Park, Taunton	1	0	0
Goring, C.	Wiston Park, Steyning	1	0	0
†Gorringe, Hugh	Kingston-by-Sea, Brighton	..		
Gotto, C. L.	Passaford, Hatherleigh, N. Devon	1	1	0
Grace, A.	39, Welsh Back, Bristol	1	0	0
Grant, C. E.	Bursar, King's College, Cambridge	1	0	0
Grant, W. J.	Pentonville, Newport, Mon.	1	0	0
Greaves, R. M.	Wern, Portmadoc, North Wales	1	0	0
†Greenall, Mrs. C. E.	The Manor, Carlton, Scroop, Grantham	..		
†Greenall, Sir G., Bart.	Walton Hall, Warrington	..		
Greenslade, W. R. J.	Fairfield, Trull, Taunton	1	0	0
Greenway, W.	Halse, Taunton	1	0	0
Greenwell, Sir W., Bart.	Marden Park, Woldingham, Surrey	1	0	0
Gregor, T.	11, Sketty Road, Swansea	1	0	0
Gregory, W.	Wellington, Somerset	1	0	0
†Guest, Lady Theodora	Inwood, Templecombe.	..		
Guille, H. C. de Stevens	St. George, Castel, Guernsey	1	0	0
Guise, Sir W. F., Bart.	Elmore Court, Gloucester	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Gunning, A. E.	Fosse Farm, Combe Hay, Bath	1	0	0
Gunther, C. E.	Tongswood, Hawkhurst, Kent	1	0	0
Guyon, Rev. H. C.	The Rectory, Lamyat, Bath	1	0	0
Habgood, G.	Harley Lodge, Wimborne	1	0	0
Hall, A. C.	The Manor, Great Rollright, Chipping Norton	1	0	0
*Hambleden, Viscount	Greenlands, Henley-on-Thames	5	0	0
†Hambro, Sir Everard A.	Hayes Place, Beckenham, Kent		..	
Hancock, Rev. Prebendary F.	The Priory, Dunster, Somerset	1	0	0
Hancock, H. C.	The Court, Milverton, Taunton	1	0	0
Hancock, R. D., Mrs.	Halse, Taunton	1	0	0
Harbottle, E.	Topsham	1	0	0
Harding, C.	Upton Grove, Tetbury	1	0	0
Harding, T. K.	Ashton Gifford House, Codford, Bath	1	0	0
Harding, R.	Fenswood Farm, Long Ashton, Bristol	1	0	0
Hardwick, E. A.	Kewstoke, Weston-super-Mare	1	0	0
Harpur, W.	Borough Engineer, Cardiff	1	0	0
Harris, A.	Brounsell Farm, Stourton Caundle, Stalbridge	1	0	0
Harris, C. & T. (Ltd.).	Bacon Curers, Calne, Wilts	1	0	0
Harris, H.	Singleton Park Farm, Sketty, S.O., Glam.	1	0	0
Harris, J. M.	Chilvester Hill, Calne, Wilts	1	0	0
Harrison, Miss	West Hay, Wrington	1	1	0
Harrison, McGregor & Co.	Leigh, Lancashire	1	0	0
Haversham, Lord	Trevina, Tintagel, Cornwall	1	0	0
Haward, T. W..	Brombil House, Margam, Port Talbot	1	1	0
Hawkins, Mrs.	10, Portland Place, London, W.	1	1	0
†Haydon, Lt.-Col. W. H.	Maidford, Malmesbury, Wilts		..	
Hayes, F. J.	West Pennard, Glastonbury	1	0	0
*Heathcoat-Amory, Sir J. H., Bart.	Knightshayes Court, Tiverton, Devon	2	2	0
Heathcoat-Amory, I. M.	Hensleigh, Tiverton, Devon	1	0	0
Heberden, W. B., C.B.	Elmfield, Exeter	1	0	0
Hember, S. H.	Queen Charlton, near Bristol	1	0	0
†Henderson, A. N.	Street Ashton House, Lutterworth		..	
Henderson, Sir A., Bart.	Buscot Park, Faringdon, Berks	1	1	0
Henry, Lt.-Col. F.	Elmstree, Tetbury	1	0	0
Hepple, E. M.	Camerton, near Bath	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Herbert, Maj.-Gen. Sir Ivor, Bart., M.P.	Llanarth Court, Raglan, Mon.	1	0	0
Hesse, F. W.	Bloomfield House, Bloomfield Road, Bath	1	0	0
†Hewitt, G. Southby.	Day, Son & Hewitt, 22, Dorset Street, London, W.		..	
Hick, W. A.	Wayfield, Batheaston, Bath.	1	0	0
Hicks, Mrs. R.	Treganhoe, Newbridge, R.S.O., Cornwall	1	0	0
Higgins, B.	Millhouse Farm, Chesterblade, Shepton Mallet	0	10	0
Hignett G.	Hodshill, South Stoke, Bath	1	0	0
†Hill, B. H.	Uphill, Weston-super-Mare		..	
Hill, Edward	Stratton House, Evercreech	1	0	0
Hill, H.	Paulton, near Bristol	1	1	0
Hill, V. T.	Mendip Lodge, Langford, Bristol	1	1	0
Hill, W. B.	Underhill Farm, Cannock Road, Wolverhampton	1	0	0
Hill, Capt. W. J. M.	Westwood House, West Bergholt, Essex	1	0	0
Hippisley & Sons	Wells, Somerset	1	0	0
Hippisley, R. J. B.	Ston Easton Park, Bath	1	0	0
Hiscock, A.	Motcombe, Dorset	1	0	0
†Hoare, Sir H. H. A., Bart.	Stourhead, Zeals, S.O., Wilts.		..	
Hoare, H. C.	Stourhead, Bruton	1	0	0
Hobbs, J. T.	Maisey Hampton, Fairford	1	0	0
*Hobhouse, Rt. Hon. H.	Hadspen House, Castle Cary.	2	0	0
Hoddinott, S.	Worminster Farm, Shepton Mallet	1	0	0
Holder, H. Newton	c/o Thos. Biggs (Ltd.), 11½, Great Dover Street, London, S.E.		..	
Holland and Coombs	Bristol	1	0	0
Holt Needham, O. N.	Barton Court, Colwall, near Malvern	1	0	0
†Hooper, R. N.	Stanshawes Court, Chipping Sodbury		..	
†Hope, W. H. B.	Eastwood, East Harptree, Bristol		..	
Hopkins, W.	Pancross Farm, Llancarvan	1	0	0
Hopper, H. R.	Merryweather & Sons, Greenwich Road, London, S.E.	1	1	0
Horlick, J., D.L.	Cowley Manor, Cheltenham	1	0	0
†Horner, Sir J. F. Fortescue	Mells Park, Frome		..	
Hornsby and Sons (Ltd.)	Grantham, Lincoln	1	0	0
Horton, Rev. Le G.	Wellow Vicarage, Bath	1	1	0
Hosegood, A. W.	Williton, Taunton	1	0	0
Hosegood, Obed., jun.	Dillington, Ilminster	0	10	0
Hosken, W. J.	Pulsack, Hayle, Cornwall	1	1	0
Hoskin E.	Cartuther Barton, Liskeard	1	0	0
†Hoskins, R. J.	Beard Hill Farm, Shepton Mallet		..	
Hoskyns, H. W. P.	North Perrott Manor, Crewkerne, Somerset	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Houldsworth, A. F.	Widcombe, Kingsbridge, Devon	1	1	0
Howard, J. and F.	Britannia Works, Bedford	1	0	0
Hudson, E. V.	Wolseley Works, Witton, Birmingham	1	0	0
†Hughes, A. E.	Wintercott, Leominster	..		
Humphries, Sidney	Eastfield Lodge, Westbury-on-Trym, Bristol	1	1	0
Hunter, Sir Charles, Bart., M.P.	1, West Eaton Place, London, S.W.	1	0	0
Hunter, J. (Ltd.)	Seed Merchants, Chester	1	0	0
†Hurle, J. C.	Brislington Hill, Bristol	..		
Hurst and Son	152, Houndsditch, London	1	0	0
Hussey, J. W.	Bouverie House, Exeter	1	0	0
†Hylton, Lord	Charlton, near Radstock	..		
Ibbotson, R.	The Hawthorns, Knowle, Warwickshire	1	0	0
*Ilchester, Earl of	Melbury, Dorchester	2	2	0
Imbert-Terry, H. M.	Strete Raleigh, Whimple	1	0	0
Innes, G. P. Mitchell	Craig-yr-Haul, Castleton, Cardiff	1	0	0
International Harvester Co. (Ltd.)	80, Finsbury Pavement, London, E.C.	1	0	0
*Irby, Hon. G. N.	Porthamel, Llanfair, P.G., Anglesey	2	0	0
Ireland, A. C.	Brislington Hall, near Bristol	1	1	0
Irvine, H. O.	Southerndown, Bridgend, Glam.	1	0	0
*Islington, Lord	Hartham Park, Corsham	2	0	0
*Ismay, J. H.	Iwerne Minster, Blandford, Dorset	2	0	0
Jackman, Percy	Pulteney Hotel, Bath	1	0	0
Jackson, Sir H. M., Bart.	Llantillio Court, Abergavenny	1	0	0
Jardine, E., M.P.	The Park, Nottingham.	1	1	0
Jarmain, T. M.	Haseley Iron Works, Tetsworth	1	0	0
Jefferis, Mrs.	Royal Refreshment Rooms, Bristol	1	0	0
Jefferson, J.	Willaston House, Nantwich	1	0	0
Jenkins, D.	Flemingstone Court, Cowbridge, Glam.	1	0	0
Jenkins, E.	Charlton Road, Keynsham, Bristol	1	0	0
Jenkins, Captain Vaughan	St. Winifreds, Combe Down, Bath	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Jenkins, W. H. P.	Frenchay Park, Bristol	1	0	0
Jennings, F. H.	Cockfield Hall, Bury St. Edmunds.	1	0	0
*Jersey, Earl of	Middleton Park, Bicester, Oxon.	2	0	0
Jervoise, Mrs. B. A. L.	Herriard Park, Basingstoke	1	1	0
Jervoise, F. H. T.	Herriard Park, Basingstoke	1	1	0
Jeyes' Sanitary Compounds Company	Cannon Street, London, E.C.	1	0	0
John, E.	Cowbridge, Glamorgan	1	0	0
Johns, W. B.	Holnicote, Minehead	1	0	0
Jones, T. S.	Frondez, Radyr, Cardiff	1	0	0
Jones, W.	Pencisely, near Cardiff	1	0	0
Keel, W. W.	Stanton Drew, Somerset	1	0	0
Keeling, G.	North Hill Farm, Dunkerton, Bath	1	0	0
Keene, James B. & Co.	*Journal* Office, Bath	1	0	0
Kekewich, T. H., J.P.	Peamore, Exeter.	1	0	0
Kell & Co.	Gloucester	1	0	0
Kelly, Capt. A. L.	Cadbury House, Wincanton, Somerset	1	0	0
Kelway, W.	Huish Episcopi, Langport	1	1	0
Kemble, C. A.	Hallatrow, Bristol	1	0	0
†Kemp, L. J.	Maer, Exmouth		..	
Kennaway, Rt. Hon. Sir J. H., Bart., M.P.	Escot, Ottery St. Mary	1	1	0
Kennaway, J.	Escot, Ottery St. Mary	1	0	0
†Kettlewell, W. W.	East Harptree Court, Bristol		..	
Keynsham Stud Co.	Keynsham, near Bristol	1	0	0
*Keyser, C. E.	Aldermaston Court, Reading	2	0	0
Keyworth, J. and H. & Co.	35, Tarleton Street, Liverpool	1	0	0
King, J., M.P.	Sandhouse, Witley, Surrey	1	0	0
King and Sons, R.	Milsom Street, Bath	1	1	0
King, W. E. M.	Donhead Lodge, Salisbury	1	0	0
Kingwell, H. J.	Great Aish, South Brent, S. Devon	1	0	0
Kinneir, H.	Redville, Swindon	1	0	0
Knight, S. J.	Walnut Farm, East Dundry, near Bristol	1	1	0
†Knollys, C. R.	Weekley, Kettering		..	
Knox, E.	Kilmersdon, Bath	1	1	0
†Kruse, W.	Perran Bay House, Perranporth, Cornwall		..	

Name.	Residence.	Sub-scriptions. £	s.	d.
†Lake, C.	Oakley, Higham, Kent		..	
Lane, A. P.	Arthor's Club, St. James's, London	1	0	0
Lang, Coath H.	Ty Canol, Mumbles, S.O., Glam.	1	1	0
*Lansdowne, Marquis of	Bowood, Calne	2	0	0
Larkworthy, E. W.	Messrs. J. L. Larkworthy & Co., Worcester	1	1	0
†Latham, T.	Dorchester, Oxon		..	
Laurey, A.	Varful, Ludgvan, Long Rock, R.S.O., Cornwall	1	0	0
Lear, F. G.	The Court Farm, Rodley, Westbury-on-Severn, Glos.	1	0	0
Lee, Major-Gen. H. H.	The Mount, Dinas Powis, near Cardiff	1	0	0
Lees, Sir T., Bart.	South Lychett Manor, Poole	1	1	0
Le Feuvre, F. V.	La Fosse, St. Peter's, Jersey	1	0	0
Legard, A. G.	Brow Hill, Batheaston, Bath	1	0	0
Lennard, Sir H., Bart.	Wickham Court, West Wickham, Kent	1	0	0
Lethbridge, Charles	Heytesbury House, Heytesbury, Wilts	1	0	0
Leverton, W. A.	Columb John Farm, Stoke Canon, Exeter	1	0	0
Leverton, W.	Woolleigh Barton, Beaford, North Devon	0	10	0
Lewis, Col. H.	Green Meadow, near Cardiff	1	1	0
Lewis, Wm. and Son	*Herald* Office, Bath	1	0	0
†Ley, John Henry	Trehill, Exeter		..	
†Leyland, C. J.	Haggerston Castle, Beal, Northumberland		..	
Liddell, C. O.	Shirenewton Hall, Chepstow	1	1	0
Liddon, E., M.D.	Silver Street House, Taunton	1	0	0
Linton, E. N.	Westgate Chambers, Newport, Mon.	1	0	0
Lipscomb, Godfrey	Margam Park, Port Talbot	1	0	0
Lister, R. A. & Co. Ltd.)	Dursley, Glos.	1	1	0
†Lister, J. J.	Warninglid Grange, Haywards Heath		..	
Llewellyn, Col. Evan H.	The Court Farm, Langford, Bristol	1	1	0
Llewellyn, Llewellyn T. E.	Hackwood, Basingstoke	1	1	0
*Llewelyn, Sir J. T. D., Bart.	Penllergaer, Swansea	2	2	0
*Lloyd, Herbert	Plas Cilybebyll, Pontardawe, R.S.O., Glam.	2	2	0
Lloyd, J. C.	Dinas, Brecon	1	0	0
Lock, B. J.	Tudney Farm, Ilminster	0	10	0
*†Long, Rt. Hon. Walter H., M.P.	Rood Ashton, Trowbridge		..	
Long, Col. William	Woodlands, Congresbury, Somerset	1	0	0
Longrigg, G. E.	Weston Lea, Bath	1	0	0
Lopes, Sir H. Y. Buller, Bart.	Maristow, Roborough, Devon	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Loram Brothers	Cathedral Dairy, Exeter	1	1	0
Lovelace, T.	Bratton Court, Minehead, Somerset	1	0	0
Lucas, Lord	Wrest Park, Ampthill	1	0	0
Ludlow, Lord	Hardenhuish, Chippenham	1	0	0
†Lutley, J. H.	Brockhampton, Worcester	..		
Luttrell, Capt. A. F.	Court House, East Quantoxhead, Bridgwater	1	0	0
Luttrell, Claude M. F.	15, Gay Street, Bath	1	1	0
*MacAndrew, J. J.	Lukesland, Ivybridge	2	0	0
McCalmont, D. H. B.	Crockford's Hall, Newmarket	1	1	0
Macdonald, K.	5, Sion Hill, Bath	1	0	0
McIntosh, Mrs. C. M.	Havering Park, Havering Atte Bower, Essex	1	1	0
Major, H. J. and C. (Ltd.)	Bridgwater	1	0	0
Mallett, W. E.	The Octagon, Bath	1	0	0
†Mansell, A. E.	Mount Vernon, Melton Mowbray, Tasmania	..		
Marcus, M.	High Trees, Redhill, Surrey	1	0	0
Marden, E. D.	Marston House, Marston Magna, Bath	1	0	0
Marfell, R. H.	Great House Farm, Llangeview, Usk	1	0	0
Marken, E. R.	Henstaff Court, Pontyclun, R.S.O.	1	1	0
Marker, Richard	Combe, near Honiton	1	0	0
Marriner, C. F.	Thorpe Hall, Hasketon, Woodbridge, Suffolk	1	1	0
Marshall, L. H.	Chippenham	1	0	0
Martin, E. G. Bromley	St. Cloud, Callow End, Worcester	1	0	0
Martin, J.	Thorverton, R.S.O., Devon	1	0	0
Martin, L. J.	72-80, Mansell Street, Aldgate, London, E.C.	1	0	0
Martin and Carnes	Taunton	1	1	0
Martyn, G.	Tremeddan, Liskeard, Cornwall	1	1	0
Mason, F. F.	Swansea	1	0	0
Massey-Harris Co. (Ltd.), (C. W. Dawkins, General Manager)	54 & 55, Bunhill Row, London, E.C.	1	0	0
Master, Col. T. W. Chester	Knole Park, Almondsbury	1	1	0
Masters, A.	Lanelay Hall, Llantrissant, S. Wales	1	0	0
Mathews, Ernest	Little Shardeloes, Amersham, Bucks	1	0	0
Mathews, E. R. Norris, F.R.Hist. Soc.	Central Library, Bristol	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Matthews, Adam	The Cornhill Stud, Swansea	1	0	0
Matthews, David	Llwyneryr, Morriston, Glam.	1	0	0
Matthews, L. B.	Milton, Gillingham, Dorset	1	0	0
Maule Major-Gen. H. B.	2, Penn Lea Road, Newbridge Hill, Bath	1	0	0
Maule, M. St. John	Chapel House, Bath	1	0	0
May, A. C.	Avon House, Stoke Bishop, Bristol	1	0	0
Meade-King, W. O.	Walford House, Taunton	1	0	0
Meager, F. F.	Melbourne House, Swansea	1	0	0
Meddick, William G.	11, Great Stanhope Street, Bath	1	0	0
Medlycott, H. M.	Milborne Port, Somerset	1	0	0
Merriman, T. W.	126, Bryn Road, Swansea	1	0	0
Merry, Richard	Goulds, Broadclyst, Exeter	0	10	0
Merryweather, J. C.	4, Whitehall Court, London, S.W.	1	0	0
Merthyr, Lord	The Mardy, Aberdare	1	1	0
Methuen, General Lord, C.B., C.M.G.	Corsham Court, Wilts	1	0	0
Miers, A. H. P.	Clydoch-on-Tawe, Glam.	1	0	0
Mildmay, Capt. C. B. St. J.	Hallam, Dulverton	1	0	0
†Mildred, G. B.	Newington House, Craven Arms, Shropshire	..		
†Miles, Sir Henry, Bart.	Abbots Leigh, Bristol	..		
Millbank, Sir Powlett C. J., Bart.	Norton Manor, Presteign	1	0	0
Miller, T. A. J. P.	Caisson House, Combe Hay, Bath	1	1	0
Miller, T. H.	Clan Villa, Bathwick Hill, Bath	1	0	0
Miller-Hallett, A.	Goddington, Chelsfield, Kent	1	1	0
Mills, B. W.	31, Cambridge Place, Paddington, London, W.	1	0	0
Milsom, C. and Son	9, Fleet Street, Swindon	1	1	0
Mitchell, A. C.	Highgrove, Tetbury	1	0	0
Mitchell, E. J.	The Palmer Tyre (Ltd.), 119, Shaftesbury Avenue, London, W.C.	1	0	0
†Mitchell, F. J.	Llanfreckva Grange, Caerleon, Mon.	..		
Molassine Co. (Ltd.)	East Greenwich, London, S.E.	1	0	0
Montefiore, Mrs.	Worth Park, Crawley, Sussex	1	1	0
Moody, C.	Maismoor, Evercreech	1	0	0
Moore-Gwyn, J. E.	Duffryn, Neath, Glamorgan	1	0	0
†Moore, H. F.	Renée House, 48, Dulwich Road, Herne Hill, S.E.	..		
Moore-Stevens, Col. R. A.	Winscott, Torrington, Devon	1	0	0
Morant, Mrs. E.	Brokenhurst Park, Hants	1	0	0
Morel, C. E.	. . . .	1	0	0
*Moreton, Lord	Sarsden Lodge, Chipping Norton	2	2	0
Morgan, Lewis	Cathedral Road, Cardiff	1	1	0
*Morgan, T.	Capital and Counties Bank Buildings, Taff Street, Pontypridd	2	2	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Morgan, T. S.	Whimple House, Whimple, Exeter.	1	0	0
Morgan, W. A.	Winthank, St. Andrews, Fife	1	1	0
Morgan-Richardson, C.	Morgenan, Rhoshill, R.S.O.	1	0	0
*Morley, Earl of	Saltram, Plympton, Devon	2	0	0
Morley, Charles	Shockerwick, Bath	1	1	0
*Morris, C.	Highfield Hall, St. Albans	2	0	0
Morris and Griffin (Ltd.)	Maindee, Newport, Mon.	1	1	0
Morris, Sir R. A., Bart.	Sketty Park, Swansea	1	0	0
Morris, Son and Peard	Auctioneers, North Curry, Taunton	1	0	0
Morris, W.	25, Albany Villas, Hove, Brighton	1	0	0
Morrison, Captain J. A.	Salisbury	1	0	0
†Morrison, J. A.	Fonthill House, Tisbury, Wilts		..	
*Mount-Edgcumbe, Earl of	Mount Edgcumbe, Devonport	2	2	0
†Mucklow, E., J.P.	Woodhill, Bury, Lancashire		..	
Müller Jansen	Newport, Mon.	1	0	0
Munn, F.	Dumballs Road, Cardiff	1	0	0
Muntz, F. E.	Umberslade, Hockley Heath, Warwickshire	1	0	0
Muntz, J. O.	Goodameavy, Yelverton	1	0	0
Murray-Anderdon, H. Edwd.	Henlade House, Taunton	1	1	0
Naper, Col. W. D.	2B, Dawson Place, Hyde Park, London, W.	1	0	0
Napier, H. B.	Ashton Court Estate Office, Long Ashton, Bristol	1	1	0
Neagle, D. T.	London, Glos. and N. Hants Dairy Company, Clifton, Bristol	1	0	0
Neal, J. F.	Kingsdon, Taunton	1	0	0
Neeld, Sir A. D., Bart., C.B.	Grittleton, Chippenham	1	0	0
Nelder, C. W.	Carnarvon Arms, Dulverton, Somerset	0	10	0
†Neville-Grenville, Robert	Butleigh Court, Glastonbury		..	
New, H. G.	Craddock, Cullompton, Devon	1	0	0
Newington, C.	Oakover, Ticehurst, Sussex	1	0	0
Newman, Sir R. H. S. D. L., Bart.	Mamhead Park, near Exeter	1	1	0
Nicholetts, E. C.	The Lons, Bitton, Gloucestershire	1	0	0
Nichols, G.	49, Broad Street, Bristol	1	0	0
Nicoll, D.	Burntwood House, near Winchester	1	0	0
Nix, J.	Tilgate, Crawley, Sussex	1	1	0
Nixon, W.	The University, Bristol	1	0	0
*Normanton, Earl of	Somerley, Ringwood	2	0	0
North, G. F.	Stratfield Saye, Mortimer, R.S.O., Berks.	1	0	0
*Northumberland, Duke of	Albury Park, Guildford	5	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Oakey, G.	Brittleware Farm, Charlwood, Surrey	1	0	0
Oakley, H. E.	Dewstow, near Chepstow	1	1	0
Oborn, T.	Twinhoe Farm, Midford, Bath	1	0	0
†O'Hagan, Lord	Pyrgo Park, Havering Atte Bower, Romford		..	
O'Halloran, Miss P.	8, Upper George Street, London, W.	1	0	0
Olver, J. C.	Woodland Valley, Ladock, Cornwall	1	0	0
Osborne, J.	9, Clifton Park, Clifton	1	1	0
Osborne, W.	Barrack Farm, Odd Down, Bath	1	0	0
Osmond and Son	Grimsby	1	0	0
Paget, A. B.	Church Farm, Fawley, Hants	1	0	0
Paget, L. C.	Middlethorpe Hall, Yorks.	1	0	0
*Paget, Sir Richard, Bart.	9, King's Bench Walk, Temple, London	2	0	0
Pain, W. H.	High House, Kingsbridge	1	0	0
Palmer, G. Ll.	Lackham, Lacock, Wilts	1	0	0
Palmer, G. W.	Marlston Lodge, Newbury	1	0	0
†Palmer, R.	Lodge Farm, Nazeing, Waltham Cross, Essex		..	
Palmer, W. H.	York Buildings, Bridgwater	1	0	0
†Parker, Hon. Cecil T.	The Grove, Corsham, Wilts		..	
Parker, F. J.	Plymouth Street, Swansea	1	0	0
Parmiter, P. J. & Co.	Tisbury, Wilts	1	0	0
Parry-Okeden, E.	Turnworth, Blandford	1	0	0
Parry-Okeden, Lieut.-Col. U. E. P.	Turnworth, Blandford	1	0	0
Parsons, A. J.	31, Sussex Street, St. Philip's, Bristol	1	0	0
†Parsons, J. D. Toogood, jun.	Manor View, Rusthall, Tunbridge Wells		..	
†Parsons, R. M. P.	Misterton, Crewkerne, Somerset		..	
Pass, A. D.	Manor House, Wootton Fitzpaine, Charmouth, Dorset	1	0	0
Peacock, W.	3, Buckingham Gate, London	1	1	0
Peake-Mason, W. J.	The Manor House, Trent, Sherborne	1	0	0
Pearce, S. & Co.	46a, Market Street, Manchester	1	0	0
Pearse, T. C.	Leigh Farm, Dulverton	1	0	0
Peel, E. Morton	South View, Shetty, R.S.O.	1	0	0
Peel, Viscount	52, Grosvenor Street, London, W.	1	1	0
Pember, G. H.	. . . .	1	0	0
*Pembroke, Earl of	Wilton House, Salisbury	2	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Penberthy, Professor J.	Dean Hall, Newnham, Glos.	1	0	0
Pendarves, W. Cole	Pendarves, Camborne, Cornwall	1	1	0
Perkins, Col. E. K.	Shales, Bitterne, Hants.	1	1	0
Perowne, Col. J. T. Woodrych	Conservative Club, St. James Street, London, S.W.	1	0	0
†Perry-Herrick, Mrs.	Beau Manor Park, Loughborough		..	
Petherick, R., jun.	Acland Barton, Landkey, Barnstaple	0	10	0
Petters (Ltd.)	Yeovil	1	0	0
Pettifer, T. & Co.	Eydon, Banbury	1	0	0
†Pettifer, T. Valentine, J.P., F.R.C.V.S.	The Knoll, Tetbury, Gloucester		..	
Phillips, F.	Nantcoch, Newport, Mon.	1	1	0
Phillips, G.	The Gaer, Newport, Mon.	1	0	0
Phillipps, L. R.		1	1	0
Piggott, Brothers & Co.	59, Bishopsgate Street Without, London, E. C.	1	0	0
Pike, C. A.	Chilean Nitrate Committee, Friar's House, 39-41, New Broad Street, London, E.C.	1	0	0
†Pinney, R. W. P.	Sutton Veny, Warminster		..	
†Pitt, W.	South Stoke House, Bath		..	
Plaister, C.	Church Farm, Monkton Combe, Bath	1	0	0
Plumptre, H. F.	Goodnestone, Dover	1	0	0
*Plymouth, Earl of	Hewell Grange, Bromsgrove	4	0	0
*Poltimore, Lord	Poltimore Park, Exeter	3	3	0
Poole, Mrs. A. R.	King's Hill, Dursley	1	1	0
Pope, Alfred	Dorchester	1	0	0
Pope, A. R.	Culliford House, Dorchester	1	0	0
Pope, John	Nowers, Wellington, Somerset	1	0	0
Pope, S. P.	Howden, Tiverton, N. Devon	1	1	0
Popham, H. L.	Hunstrete House, Pensford, Bristol	1	0	0
Porter, W. J. H.	Glendale Farm, Wedmore	1	0	0
†Portman, Hon. C. B.	Goldicote, Stratford-on-Avon		..	
Portman, Hon. Mrs. C. B.	Goldicote, Stratford-on-Avon	1	0	0
*Portman, Viscount	Bryanston, Blandford	5	0	0
Price, Owen	Nantyrharn, Cray, Brecon	1	0	0
Prichard, H. L.	Penmaen, R.S.O., Glam.	1	1	0
Pritchard, D. F., J.P.	Crumlin Hall, Crumlin, Mon.	1	1	0
Proctor, H. and T. (Ltd.)	Cathay, Bristol	1	1	0
Pullen, James	Tormarton, Gloucester	1	0	0
†Purgold, A. D.	Ebnal Lodge, Gobowen, Salop		..	
Quantock Vale Cider Co.	North Petherton, Bridgwater	1	1	0
Quested, J. E.	The Firs, Cheriton, Kent	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
*†Radnor, Earl of	Longford Castle, Salisbury	..		
†Ransome, B. C.	Orwell Works, Ipswich	..		
Ransome, E. C.	Orwell Works, Ipswich	1	0	0
Rawlence, Ernest A.	Newlands, Salisbury	1	0	0
Rawlence, G. Norman	Newlands, Salisbury	1	0	0
Read, B.	Church Farm, Cam, Dursley, Gloucester	1	0	0
Rees, D.	Brynbedw, Tylorstown, Glam.	1	1	0
Rees, W. J.	Laurels, Swansea	1	1	0
Reeves, Robert and John, and Son	Bratton Iron Works, Westbury, Wilts	1	0	0
*Reid, J. McClymont	Cleeve Grange, Bishops Cleeve, Gloucestershire	2	0	0
Remnant J. F., M.P.	The Grange, Hare Hatch, Twyford	1	0	0
Rendall, W.	Hempton Lodge, Nr. Hythe, Kent	1	1	0
Riccard, H. J. H.	5, Beaufort East, Bath	1	0	0
Rice, E. & Son	Velindre, Morriston, Glam.	1	0	0
Rice, H. E. H.	Dene Court, Dover	1	0	0
Rich, Thos.	Aldsworth, Northleach, Glos.	1	0	0
Richardson, Rev. A.	Combe Down Vicarage, Bath	1	0	0
Riley, J. L. & A.	The Twerne, near Ledbury	1	0	0
Robins, J.	High Bray, South Molton	0	10	0
Robins, T.	Gratton Barton, High Bray, South Molton	1	0	0
Robinson, E. S. & A. (Ltd.)	Redcliffe Street, Bristol	1	1	0
Robinson, G. & Co.	137, Fenchurch Street, London, E.C.	1	0	0
Robinson, John & Co.	Bristol	1	1	0
Roe, W. J.	West Pennard, Glastonbury	1	0	0
Rogers, E. P.	Burncoose, Perranwell, Cornwall	1	0	0
Rogerson, R. W.	Ward and Co., Northgate Street, Bath	1	0	0
Rolleston, S. V.	Saltford House, Saltford, Bristol	1	0	0
Rolleston, Col. V., J. P.	Saltford House, near Bristol	1	1	0
Rose, W. J.	Rowley Farm, Combe Hay, Bath	1	0	0
Rothschild, Lord	Tring Park, Herts	1	0	0
Rouse-Boughton, Sir W. St. A., Bart.	Downton Hall, Ludlow	1	0	0
Rouse-Boughton, Lady	Downton Hall, Ludlow	1	0	0
Rowe, F. W.	Trevego, Lostwithiel, Cornwall	1	0	0
Rowliffe, E. L.	Hall Place, Cranleigh, Guildford	1	1	0
Royal Guernsey Agricultural and Horticultural Society	Guernsey	1	0	0
Runciman, Rt. Hon. Walter, M.P.	Doxford, Clathill, Northumberland	1	0	0
Ruston, Proctor & Co. (Ltd.)	Lincoln	1	0	0
Rutherford, J. A.	Highclere Estate Office, Newbury, Berks	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Sage, J.	Vale Farm, Batcombe, Evercreech	1	0	0
Saillard, P.	Buchan Hill, Crawley, Sussex	1	0	0
St. Audries, Lord	St. Audries, Bridgwater	1	1	0
*St. Germans, Earl of	St. Germans, Cornwall	2	0	0
†Salmon, H. C.	North Fields, Bridgwater		..	
Salmon, W.	Yonder Broadpool Farm, Doulting, Shepton Mallet	1	0	0
Salomons, L.	Norbury Park, Dorking, Surrey	1	0	0
Salter, Benjamin	Newlands, Broadclyst, Exeter	1	0	0
Salter, T.	Beare Farm, Broadclyst, Exeter	1	0	0
Sampson, R. H., J.P.	Bryngwili, Pontardulais	1	0	0
Samuel, A.	74, Mansel Terrace, Swansea.	1	0	0
Samuelson, Ernest	Bodicote Grange, Banbury	1	1	0
Sanders, R. A., M.P.	Barwick House, Yeovil	1	0	0
Sandys, Capt. G. J., M.P.	Hatherleigh House, Weston-super-Mare	1	1	0
Sanford, Col. E. C. A., C.M.G.	Highover, Westerham, Kent.	1	0	0
Sanford, H. S. J. A.	The Court House, Middlehill, Broadway, Worcestershire.	1	0	0
Sankey, R. I.	Queen Anne's Mansions, St. James's Park, London, S.W.	1	0	0
Scobell, Col. Barton L. J.	Kingwell Hall, High Littleton, near Bristol	1	1	0
Scobell, G. B.	Kingwell Hall, near Bath	1	0	0
†Scott, T.	Ditton Court, Maidstone		..	
†Seaton, Lord	Beechwood, Plympton, Devon		..	
Sedgwick, T. E.	26, Oriental Street, Poplar, London, E.	1	1	0
Senior and Godwin	Auctioneers, Sturminster Newton, Dorset	1	1	0
Shackell, R. F.	Church Farm, Twerton-on-Avon, Bath	1	0	0
Shakerley, Col. H. W.	Enham Place, Andover	1	0	0
†Shaw-Stewart, Walter R.	Hayes, Shaftesbury		..	
Shatford, F.	Bosmore Farm, Henley-on-Thames	1	0	0
Sheldon, W.	Long Lane Farm, Bexley Heath	1	0	0
*Shelley, Sir John, Bart.	Shobrooke Park, Crediton	2	2	0
Shelley, J. F.	Shobrooke Park, Crediton	1	0	0
Sheppard, W. A.	14, Widcombe Crescent, Bath	1	0	0
†Sherston, Major C. D.	Evercreech, Somerset		..	
†Sherston, C. J. T.	Evercreech, Somerset		..	
*Sdimouth Viscount	Upottery Manor, Honiton	2	0	0
Sillifant, A. O.	Culm Leigh, Stoke Canon, Exeter	1	0	0
Simonds, L. de L.	Audley's Wood, Basingstoke	1	1	0
*Simpson, Charles (Hewthorn & Co.)	Walton Lodge, Broxbourne, Herts	2	0	0
Simpson, F. C.	Maypool, Churston Ferrars, R.S.O., S. Devon	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Sinclair, James	8, Breams Buildings, Chancery Lane, London, E.C.	1	0	0
*Singer, W. M. G.	42, Charles Street, Berkeley Square, London, W.	2	0	0
Skinner, G. C.	Pound, Bishops Lydeard	1	0	0
Skrine, Col. H. M.	Warleigh Manor, Bath	1	1	0
Skyrme, J.	Madley, Hereford	1	0	0
Slatter, J.	Paxford, Campden, S.O., Glos.	1	0	0
Smail, J. F.	Warren Wood, Hayes, Kent	1	1	0
Smart, G. E.	Combe Hay Manor, Bath	1	1	0
Smith, A. J.	Brooklea, St. Anne's Park, Bristol	1	0	0
Smith, C. C. F.	Perfect Dairy Machines (Ltd.), 105, Middle Abbey Street, Dublin	1	0	0
Smith, Bros. & Co. (Ltd.)	Westgate Buildings, Bath	1	0	0
Smith, J.	Monkton, near Hereford	1	0	0
†Smith, J. W.	Thinghill Court, Hereford		..	
Smith, Hon. Mrs. Murray	Gumley Hall, Market Harborough	1	0	0
†Smith, S. Lee	Larkfield, Maidstone		..	
Smith-Barry, J. H.	Stowell Park, Pewsey, Wilts.	1	0	0
*Smyth, Lady	Ashton Court, Bristol	2	2	0
Smyth, P.	Broford, Dulverton	1	0	0
Smyth-Osbourne, J. S.	Ash, Iddesleigh, N. Devon	1	0	0
Smyth-Richards, G. C.	Filleigh Lodge, South Molton	1	0	0
Snow, Major A. D.	Wall Tyning, Bitton, Nr. Bristol	1	1	0
*Somerset, Duke of	Maiden Bradley, Bath	2	0	0
Somerset Trading Co. (Ltd.)	Bridgwater	1	1	0
†Somerville, A. F.	Dinder House, Wells, Somerset		..	
South-Eastern Agricultural College (The Principal)	Wye, Kent	1	0	0
Southwood, J. W.	1, St. Peter's Terrace, Twerton, Bath	1	0	0
Spear Brothers and Clark (Ltd.)	Southgate Street, Bath	1	0	0
†Spearman, Sir J. L. E., Bart.	Craigour, Gullane, East Lothian		..	
Spencer, F.	Pondsmead, Oakhill, near Bath	1	1	0
Spencer, W. C.	Manor Farm, Hillfield, Cattistock, Dorset	1	0	0
Spicer, Capt.	Spye Park, Chippenham	1	0	0
Spicer, Lady M.	Spye Park, Chippenham	1	0	0
*Spillers & Bakers (Ltd.)	Cardiff	2	0	0
Spratts' Patent (Ltd.)	24 and 25, Fenchurch Street, City, London, E.C.	1	0	0
Sprye, Rev. T. de L.	Priston Rectory, Bath	1	0	0
Staley, A. E.	Combe Hill House, Barton St. David, Somerton, Somerset	1	0	0
*†Stanley, E. A. V.	Exford, Taunton		..	
Stephens, H. C.	Avenue House, Finchley, N.	1	0	0
Stevens, R. N.	Woodham Hall, Woking, Surrey	1	0	0
Stephenson, R. E. W.	Tue Brook, Liverpool	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Steward, Major R. H.	Freshford, near Bath	1	0	0
Stewart, Rev. H. J.	The Vicarage, Cockett, Glam.	1	0	0
Stoddart, F.	Manor House, Walton, Clevedon	1	1	0
Stoffell, W. M.	11, Cavendish Place, Bath	1	1	0
Stokes, C. W. Rees	Town Clerk, Tenby	1	1	0
Stooke, J.	Sherford, Brixton, Plymouth	1	0	0
Storrar, J.	Grittleton, Chippenham	1	0	0
Stothert, P. K.	Bradford-on-Avon, Wilts	1	0	0
†Strachie, Lord	Sutton Court, Pensford, Somerset		..	
Strangways, Hon. H. B. T.	Shapwick, Bridgwater	1	0	0
Stratton, Richard	The Duffryn, Newport, Mon.	1	0	0
Stride, T.	Southgate Street, Bath	1	0	0
Strode, G. S. S.	Newnham Park, Plympton	1	0	0
*Stuart, Lord Ninian Crichton, M.P.	Cardiff	2	2	0
Stucley, H. V. G.	Pillhead, Bideford, North Devon	1	0	0
Studdy, T. E.	Mazonet, Stoke Gabriel, Totnes	1	0	0
Studley, J. Im.	Toller Fratrum, Maiden Newton	1	0	0
*Sutton, E. P. F.	Brockmer, Reading	2	2	0
*Sutton and Sons	Seedsmen, Reading	2	2	0
Swansea, Lord	Singleton, Swansea	1	0	0
Swanwick, Bruce	R. A. College Farm, Cirencester	1	0	0
Swanwick, R.	College Farm, Cirencester	1	0	0
Symons, J. & Co. (Ltd.)	The Plains, Totnes	1	1	0

Talbot, Miss	Margam Park, Port Talbot	1	0	0
Tamlin, W.	Talbot House, Stanley Road, Teddington, Middlesex	1	0	0
Tangyes (Ltd.)	Cornwall Works, Birmingham	1	0	0
Tanner, H.	Westgate Buildings, Bath	1	0	0
Tapp, David James	Knaplock, Winsford, Dulverton	1	0	0
Tapp, J. A.	Knaplock, Dulverton	1	0	0
Tasker W. & Sons (Ltd.)	Waterloo Ironworks, Andover	1	1	0
Tate, J. A.	Fairfield, Wells, Somerset	1	0	0
Tatem, W. J.	The Court, St. Fagan's, Glam.	1	0	0
Taverner, G. E.	Budlake, Devon	1	0	0
Taylor, A. H. W.	8, New Bond Street, Bath	1	0	0
Taylor, C.	Rock Hill Farm, Keynsham	1	0	0
†Taylor, George	Cranford, Hounslow, W.		.	
Taylor, H. W.	Showle Court, Ledbury, Hereford	1	0	0
†Tazewell, W. H.	Manor House, Taunton		..	
*Temple, Earl	Newton St. Loe, Bristol	2	2	0
Templeman, G. D.	Hambridge, Curry Rivell, Taunton	1	0	0
Thomas, D. A., M.P.	Llanwern, Newport, Mon.	1	1	0
Thomas, Sir Griffith	Court Herbert, Neath	1	0	0
Thomas, I.	Ely Farm, Cardiff	1	0	0
Thomas, J. A.	Dolgoy, West Cross, R.S.O., Glam.	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Thomas-Stanford, C.	Preston Manor, Brighton	1	0	0
Thomas, W. Jones	Dros-y-Mor Park Road, Barry, Glam.	1	1	0
Thomas, W. Meyler	Ynysplwm, Llantrissant	1	0	0
Thomas & Evans & John Dyer (Ltd.)	Swansea	1	0	0
Thompson, J. W. H.	2, Southwick Crescent, London, W.	1	1	0
Thomson, Sir R. White	Broomfield Manor, Exbourne, N. Devon	1	0	0
Thorley, J.	Wood Hall, Shenley, Herts	1	0	0
Thorne, J. G.	Horridge, Romansleigh, S. Molton.	0	10	0
Thornton, W. A.	Lock, Partridge Green, Sussex	1	0	0
Thresher, E. B.	Corfe Hill, Weymouth	1	0	0
Thring, D. T.	Boughton House, near Kettering	1	1	0
Thurlow, G. R.	Stowmarket	1	0	0
*Thynne, Lord A., M.P.	15, Manchester Square, London	2	0	0
Tidswell, R. J.	Haresfield Court, Stonehouse, Glos.	1	0	0
Tillard, Rear-Admiral P. F.	Alford House, Castle Cary	1	0	0
Tilley, R.	Chippenham	1	0	0
Tilley, W. T. S.	East Compton, Shepton Mallet	1	1	0
Timmins, T. B.	24, Green Park, Bath	1	0	0
Tipper, B. C., and Son	Balsall Heath, Birmingham	1	0	0
Titt, J. W.	Implement Works, Warminster	1	0	0
Toogood, E. K.	Messrs. Toogood & Sons, Southampton	1	0	0
Torr, E. R. Berry	Instow, N. Devon	1	0	0
Tory, Randolph	Charisworth, Blandford	1	0	0
Trafford, G. R.	Hill Court, Ross, Herefordshire	1	1	0
*Tredegar, Viscount	Tredegar Park, Newport, Mon.	2	2	0
Treffry, J. de C.	Penarwyn, Par Station	1	1	0
Trefusis, Col. The Hon. J. S.	Hawkmoor, Bovey Tracy, Devon	1	0	0
Trelawney, J. S.	Harewood, Buckfastleigh, Devon	1	0	0
Tremaine, H. C.	Trerice, Newlyn East, Cornwall	1	0	0
Tremayne, Capt. W. F.	Carclews, Perran ar Warthal, Truro	1	1	0
Tremayne, Hon. Mrs.	Sydenham, Lewdown, R.S.O., N. Devon	1	0	0
Trepplin, Ernest C.	Orchard Portman, Taunton	1	0	0
Trevilian, E. B. Cely	Midelney Place, Curry Rivell, Taunton	1	0	0
Troup, Alan C.	Doddean, Salisbury	1	0	0
Troyte, H.	Huntsham Court, Bampton, Devon	1	0	0
Trump, W.	Borough Farm, Broadclyst, Exeter	1	0	0
Tucker, H.	Sutton Montis, Sparkford, Bath	1	0	0
Tucker, M. & Co.	Broad Quay, Bath	1	0	0
†Tudway, C. C.	The Cedars, Wells, Somerset		..	
Turner, Drysdale	R.A. College, Cirencester	1	0	0
Turner, J. H.	West Mollard, South Molton	1	0	0
Turner Brothers	Milsom Street, Bath	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Turnor, Lt.-Col. W. W.	Pinkney Park, Chippenham	1	0	0
Twentyman, Exors. of the late A. C.	Castlecroft, Wolverhampton	1	0	0
Tyler, General	Llantrythyd, near Cowbridge	1	1	0
Unite, John (Ltd.)	291, Edgware Road, London	1	1	0
Unwin, L.	Tiverton	1	0	0
†Vacher, E. P.	Compton, Winchester			
Valletort, Viscount	Mount Edgcumbe, Devonport		1	0
Vaughan, Rev. Preb.	The Rectory, Wraxall. Somerset		0	0
Veitch, P.	Exeter		0	0
†Verulam, Earl of	Gorhambury, St. Albans		..	
Vicary, W.	The Knoll, Newton Abbot, S. Devon		0	0
Villar, W. J.	Tauntfield House, Taunton		0	0
Vine & Co. (Ltd.)	Cornhill Chambers, Swansea.		0	0
Vivian, C. C.	Forest Hall, Forest Fach, Glam.		0	0
Vivian, Miss	Clyne, Blackpyl, S. Wales		0	0
Waide, W. and Sons	Churn Works, Leeds	1	0	0
Waldegrave, Earl	Chewton Priory, Somerset	1	0	0
*Waleran, Lord	44, Hans Mansions, London, S.W.	2	0	0
Walker, E. G. F.	The Hollies, Chew Stoke, Bristol	0	10	0
Walker, H.	Beach, Bitton, Glos.	1	0	0
Wallis and Stevens	North Hants Iron Works, Basingstoke	1	0	0
Wallop, Hon. J.	Barton House, Morchard Bishop, Devon	1	0	0
Walrond, Hon. L., M.P.	Bradfield, Cullompton	1	1	0
†Walsingham, Lord	Merton Hall, Thetford, Norfolk		..	
Ward, J. E.	Red Lodge, Purton, Wilts	1	0	0
Ward, R. B.	Westwood Park, Droitwich	1	0	0
Wardlaw, H. and A.	Holway Farm, Sherborne	1	0	0
†Waring, C. E.	Conservative Club, Cardiff		..	
Waring, H. F.	Farningham Hill, Farningham, Kent	1	0	0
Warne, J.	Treveglos, St. Mabyn, R.S.O.	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Warne, T.	Trevisquite Manor, St. Mabyn, R.S.O.	1	0	0
†Warner, T. C.	Bretterham Park, Suffolk		..	
Waterloo Mills Cake and Warehousing Co. (Ltd.)	Wilmington, Hull	1	0	0
Watson, H. R.	Purse Caundle, Sherborne	1	0	0
Watson, T. E.	St. Mary's Lodge, Newport, Mon.	1	0	0
Watts, J.	Backwell, near Bristol	1	0	0
*Way, General N. S.	Manor House, Henbury, Bristol	2	0	0
Weaver & Co.	Beaufort Warehouses, Swansea	1	0	0
Webb, E. and Sons	Wordsley, Stourbridge	1	0	0
Weech, J. and Sons	Maudlin Street, Bristol	1	0	0
Welch-Thornton, H.	Beaurepaire, Basingstoke	1	1	0
Were, J. Kennet	Sidmouth	1	1	0
Wernher, Lady	Luton Hoo, Luton	1	0	0
Wessex Associated News (Ltd.)	Westgate Street, Bath	1	0	0
Weston, H.	The Bounds, Much Marcle, *via* Dymock, Herefordshire	1	0	0
†White, A. R.	Charnage, Mere, Wilts		..	
White, F.	Torweston, Williton	1	0	0
White, W. J. S.	Zeals Park, Wiltshire	1	0	0
Whitley, S. R.	Rookwood, Shinfield, Reading	1	0	0
Whitley, W. & H.	Primley Farm, Paignton	1	0	0
Whitting, C. E.	Uphill Grange, Weston-super-Mare	1	1	0
Whittuck, E. A.	Claverton Manor, Bath	1	1	0
Wilder, J.	Yield Hall Foundry, Reading	1	1	0
Will, H. M., M.A., B.Sc.	117, Victoria Street, Westminster, London, S.W.	1	0	0
Willcock, T.	Dunham Mount, Bowdon, Cheshire	1	0	0
Willcox, W. H. & Co.	36, Southwark Street, London	1	0	0
†Willett, P. A.	Brighton		..	
Williams, E.	Lanusk, Usk	1	0	0
Williams, G. L.	Chavenage, Tetbury	1	1	0
Williams, J.	Llanover Estate, Newport, Mon.	1	0	0
Williams, J.	Scorrier House, Scorrier, Cornwall	1	0	0
Williams, J. C., M.P.	Werrington Park, Launceston	1	0	0
Williams, J. G.	Manor Farm, Pendley, Tring	1	0	0
†Williams, M. Scott	Woolland House, Blandford		..	
Williams, P. D.	Lanarth, St. Keverne	1	1	0
†Williams, Col. Robert, M.P.	Bridehead, Dorchester		..	
Willis, J.	Southwood, Evercreech	1	0	0
Willis, J. Deane	Bapton Manor, Codford, Wilts	1	1	0
Wills, A. Stanley	21, Royal Crescent, Bath	1	0	0
Wills, G. A.	Burwalls, Leigh Woods, Bristol	1	0	0
*Wills, W. D. & H. O.	Bedminster, Bristol	2	0	0
Wills, W.	Marlwood, Thornbury, Glos.	1	0	0
Wilmot, S. M.	Albert Road, St. Philips, Bristol	1	0	0
Wilson, A. de C.	Madresfield Grange, Malvern	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Winans, W.	Surrenden Park, Pluckley, Kent	1	0	0
Winchester, Marquis of	Amport St. Mary, Andover	1	1	0
Wingfield, A. H.	Ampthill House, Ampthill	1	0	0
Winter, Major F. J.	Gordon Villas, St. Brannock's Road, Ilfracombe	1	0	0
†Winterton, Earl, M.P.	Shillinglee Park, Petworth	..		
Withers, W. R.	Lower Court Farm, Long Ashton, Bristol	1	0	0
Wodehouse, Rt. Hon. E. R.	56, Chester Square, London	1	0	0
Wood, W. A., M. & R. Machine Co.	36, Worship Street, London, E. C.	1	1	0
Wood-Homer, G. C.	Bardolf Manor, Dorchester	1	0	0
Woodhouse, G. E.	Norden, Blandford	1	0	0
Woodhouse, Lt.-Col. S. H.	Heatherton, Taunton	1	0	0
Wootton, J. H.	Byford, Hereford	1	1	0
Worrall, W. H.	Clyst St. Mary, Exeter	1	0	0
Wright, Col. W. C.	Gwerneinon, Blackpyl, Swansea	1	0	0
Wright, J. R.	Ashbury House, Ashbury, N. Devon	1	1	0
Wyatt, A. C.	St. James' Street, St. James' Square, Bath	1	0	0
†Wynford, Lord	Warmwell, Dorchester	..		
Yeo Bros., Paull & Co. (Ltd.)	81, Victoria Street, Bristol	1	0	0
Yorwerth, T. J.	High Street, Cowbridge, Glam.	1	0	0
Young, E. A.	Mangotsfield, Bristol	1	0	0
Zacharias, J. & Co.	Oxford	1	0	0
(21)				
Total . . 1076				

INDEX.

ABERDEEN-ANGUS CATTLE, Prizes awarded to, xxix
—— —— Cow, 92
Acetification of Cider, 123
Acland, Sir T. D., Bart., 33
"Agrarian Problem in the 16th Century," Review, 214
"Agricultural Arithmetic," Review, 218
"Agricultural Bacteriology, Laboratory Methods in," Review, 221
"Agricultural Bacteriology," Review, 221
"Agricultural Chemistry, Manual of," Review, 219
Agricultural Colleges, Training in, 219
Agricultural Investigations, 28
Agriculture, State Recognition of, 22
"Agricultural Zoology, Text Book of," Review, 211
Albuminoids, 209
Analyses, Fees for, xcix
Analysis of Soils, 142
'Animal Husbandry for Schools," Review, 224
Annual Exhibitions, xcvii
Apple Canker Fungus, 136
Arable Soils, Lime in, 70
Attendance at Truro, 97
Availability of Fertilizers, 64

"BACTERIA, AS FRIENDS AND FOES OF THE DAIRY FARMER," Review, 221
Bacterial Disease of Fruit Blossom, 137
Barker, B. T. P., on the National Fruit and Cider Institute, 116
Basic Slag, 64
—— Superphosphate, 64, 68
Bastin, Harold, on Bees in Field and Garden, 75
——, S. Leonard, on The Plant as a Parasite, 54
Bath and West Society in its early days, 4
—— Literary circles, 3
Bees, in Field and Garden, By Harold Bastin, 75
Begg, Hugh, on The Tuberculosis Order, 39
Berkshire Pigs, Prizes awarded to, li
Big Bud Disease of Black Currants, 132
Billingsley, J., on Agricultural implements, etc., 17, 27, 32
Bindweed, The, 59
Bird's Nest Orchid, 58
Black Currants, Big Bud Disease of, 132
Blue-grey Cattle, 91
Bone Meal, 67
Bordeaux Mixtures, 128
Breeding of Cross-Bred Cattle. By W. Nixon, 91
Bristol University, 114
"British and Colonial Dairying," Review, 204
Broomrapes, 56
Bush fruits dependent on bees, 80
Butter-making, Prizes awarded for, lxiv
—— ——, Prizes for in 1914, cxxiii
Butter, Prizes awarded for, lxi
——, Prizes for in 1914, cxxii
Butter Tests, Prizes awarded to, xili
—— ——, Prizes for, in 1914, cxviii

CABBAGE CULTIVATION, 186
Calcium Cyanamide, 67
Calf-Rearing, Losses in, 149
Canadian Farming, 160
Cart Horses, 184
Casein, 171
——, Manufacture of, 208
Cattle, Breeding of, 91
Cattle, Conditions and Regulations for, cxxxi
"Cattle Feeding and Dairying, Chemistry of," Review, 213
——, Prizes for, 1914, cxiii
Change of Blood, 162
Cheese, Prizes awarded for, lx
——, Prizes for, in 1914, cxxii
Chemist, The Consulting, cii
Chemistry, and modern farming, 213
"Chemistry for Students of Agriculture," Review, 219
"Chemistry of Plant and Animal Life," Review, 227
Children and Sterilized Milk, 181
China, Soils of, 211
Cider, Analyses of, 105
——, at Truro, 104

Cider, Composition of, 105, 120
——, Estimation of Tannin in, 127
—— fruit trees, 200
——, Prizes awarded for, lix
——, Prizes for in 1914, cxxii
—— Problems, 119
Citric Acid as Solvent, 65
Clover and Bees, 81
Coke, Earl of Leicester, 7
Collinson's History of Somerset, 36
Committees, 1913–1914, xciv
Conditions and Regulations, cxxix
Consulting Chemist, Report of, 149
Consumption of Milk, 169
Copyhold and Leasehold, 215
" Corn Crops, The," Review, 225
—— Rust, 62
Cornwall Education Committee, 110
—— School of Mining, 109
Council and Stewards' Mess Dinner, 24
——, Members of, xciii
County Dairy Expert, 86
Cowsheds, Ventilation of, 88
Cow Wheat, 57
Cream Cheese, Prizes for, in 1914
——, Prizes awarded for, lxi
——, Prizes for, in 1914, cxxii
Crofter, The, 93
Cross-bred Cattle, Breeding of, 91
Cross-fertilisation, 76
Cundall, H. M., on Nature Study and Handicrafts Exhibition, 106

DAIRY CATTLE, Prizes awarded to, xli
—— Industry, The, 183
" Dairying and Cattle Feeding, Chemistry of," Review, 213
—— in Germany, 168
Dairy Instruction, 207
" Dairy Technology," Review, 208
Dartmoor Sheep, Prizes awarded to, l
Darwin's Experiments, 81, 82
Devon Cattle, Prizes awarded to, xviii
—— Sheep, Prizes awarded to, xliii
Dexter, The, 93
—— Cattle, Prizes awarded to, xxxix
Diseases affecting Lambs and Sheep, 151
Dodders, The, 58
Donors of Medals, Plate, etc., cv
—— of Money Prizes, civ
Don'ts for Feeders, 90
Dorset Horn Sheep, Prizes awarded to, xlviii
Dried Blood, 67
—— Milk, 171
Dry-rot, 61
Dung, Loss of Ammonia from, 226

ECONOMIC SELECTION OF FERTILISERS, J. Hughes, on the, 63
Eelworm Disease of Strawberries, 148
Egg Hatching, 193
Eggs of Turkeys, 191
Embargo on Live Stock, 115
Enclosures, 24, 215
Entries at Truro, 94
Ettle, J., Demonstrations on Grafting by, 112
Exmoor Sheep, Prizes awarded to, l
Experimental Farm, The First, 81
Eyebright, 57

FALCONER, DR., 11
Fallow, Value of, 211
" Farmer of To-morrow, The," Review, 210
" Farm Management," Review, 222
Farms, Size of, 223
Farwell, E. W., on the Exhibition of Cider at Truro, 104
Fattening Cattle, 175
—— Sheep, 176
Feeding Milk Cows, 89
—— Stuffs, Guide to Purchasers of, c
Fencing Trees, 199
Fertilisers, Availability of, 64
——, Economic Selection of, 63
——, Guide to Purchasers of, c
——, Solubility of, 64
Fig Wort, a root parasite, 57
Financial Result of Truro Show, 98
—— Result, Truro, 1913, clvii
—— Statements, 1913, cxli
Fir wood parasite, 60
Fisheries Section, 108
Fish Guano, 67
Flukes, 158
Forestry, Prizes awarded for, lxxxiv
Fresh Air Fetish, The, 185
Fruit Blossom, Bacterial Disease of, 137
—— Orchards and Bees, 79
Fungi, 60
Fungicidal Action, 128

GALALITH, 171
Galloway Cow, 91
General Laws, lxxxviii
Germany, Dairying in, 168
Gid, 159
Grafting Demonstrations by J. Ettle, 112
Grass and the Growth of Orchard Trees, 139
—— Land, To improve, 89
Grooming Cows, 87

Guernsey Cattle, Prizes awarded to, xxxv
Guide to Purchasers of Fertilisers and Feeding Stuffs, c
Guinea-Pigs, Long-haired, 166

HACKNEYS, Prizes awarded to, x
Hairs of Bees, 78
Hampshire Sheep, Prizes awarded to, xlvii
Handicrafts Exhibition, 106
Harness Horses, Prizes awarded to, xii
Herds, Improvement in, 88
Hereford Bull, The, 93
Honey, 77
—— Agaric, Toadstool, 61
Horses, Conditions and Regulations for, cxxix
——, Prizes for, in 1914, cvi., cxiii
——, Winter Stabling of, 183
Hughes, John, on Economic Selection of Fertilisers, 63
Humble Bees, 82, 84
Hunter, Dr. A., 12
Hunters, Prizes awarded to, vi

ICE CREAM IN AMERICA, 208
Implements in 1778, 17
—— at Truro, 96
Improvement in Herds, 88
Inbreeding, 163
Incubators, 193
Indian Corn, 225
Instruction in Navigation, 109
Instructions for Selecting Samples for Analysis, ci
Investigations of Mr. Robert Mond, 180

JERSEY BUTTER TEST, 103
—— Cattle, Prizes awarded to, xxxi
Johne's Disease, 114
Judges at Swansea, 1914 ciii
—— at Truro Meeting, 1913, i
Jumping Horses, Prizes awarded to, xv

KENT SHEEP, Prizes awarded to, xlv
Kerry Cattle, Prizes awarded to, xxxix
Kingston Black, Ciders, 122

LADY MILLER AND THE BATH AND WEST SOCIETY, 4
Lambs, Diseases affecting, 151
—— in Autumn, 186
—— on Roots, 192
Lanark, Tuberculosis Order in, 52
Land Exhaustion, 20
Large Black Pigs, Prizes awarded to lii
—— White Pigs, Prizes awarded to, liv
Lime in Arable Soils, 70
—— Washes, 131, 147
Limphos, 68
Lipscomb, Godfrey, on the Forestry Exhibition at Truro, 110
List of Judges, Swansea, 1914, ciii
—— of Members, 1914, clviii
—— of Officers, xcv
Literary Circles, Bath, 3
Liver Fluke, 212
—— Rot, 158
Live Stock, Embargo on, 115
—— ——, Regulations for, cxxv
Losses in Calf-Rearing, 149
Lousewort, A Pasture Parasite, 57

MACAULAY, MRS., AND BATH SOCIETY, 5
Maize, 225
Mangels, 27, 176
"Manures and Fertilisers," Review, 225
Manurial Ingredients in Crops, 72
Mating, Hereford Bull for, 93
Meat Meal, 67
Mechanical Analysis of Soils, 144
Medals given at Truro, 95
——, Plate, etc., Donors of, cv
Membership, Terms of, lxxxvii
Members, List of, 1914, clviii
—— of Council, xciii
—— Privileges, xcix
Middle White Pigs, Prizes awarded to, lvi
Milburn Thos., on Hints to Milk Producers, 85
Milch Cows and Cabbage Cultivation, 186
Mildew on Swedes, 177
Mildews, 62
Milk and Tuberculosis, 178
——, Cleanliness in, 87
——, Consumption of, 169
Milking Machines, 170
——, Prizes awarded for, xviii
——, Prizes for, in 1914, cxxiii
Milk, Night's v. Morning's, 86
—— Powder, 171, 209
—— Producers, Hints to, 85
——, Production of, 183
——, Quality of, 101, 206
—— Sugar, 171
—— Test Classes at Truro, 99
Mining, School of, 109

Mistletoe, 54
Modern Farming and Chemistry, 213
Mond, Mr. Robert, Investigations of, 180
Money Prizes, Donors of, civ
Mongrelising, 164
Moor Land, Reclamation of, 218
"Motoculture," 160
Murch, Sir Jerom, 7

NATIONAL FRUIT AND CIDER INSTITUTE, 114
National Fruit and Cider Institute, B. T. P. Barker, on the, 116
Nature Study, 106
Navigation, Instruction in, 109
Nectar, 76
Nitrogenous Manures, 227
Nitrolim, 67
Nixon, W., on the Breeding of Cross-bred Cattle, 91

OBJECTS OF THE SOCIETY, lxxxvi
Officers, List of, xci
Officials, xcvi
Orchard Management, 197
Orchard Trees Dependent on Bees, 80
Osmotic Action, 64
Oxford Down Sheep, Prizes awarded to, xlviii

PARASITIC FUNGI, 60
—— Worms, 153
Pasture Farming, 216
Pasture, Parasites of, 57
Permanent Officials, xcvi
Peruvian Guano, 67
Petrol Engine, the 159
Pigs, Conditions and Regulations for, cxxxii
——, Prizes for, 1914, cxxi
Plant as a Parasite, S. Leonard Bastin, on The, 54
— — Examination, 18
Plants, Diseases of, 148
Ploughing Competition, The First, 25
—— in Winter, 183
Plowman, T. F., on Edmund Rack, 1
——, Thos. F., on the Society's Exhibition at Truro, 94
——, T. F., on the Society's General Operations, 112
Pollen Combs, 78
Ponies, Prizes awarded to, xi
Potash Salts, 69
Poultry, Prizes awarded for, lxxi
——, Prizes for in 1914, cxxxv
——, Soft Food for, 201
Practice v Theory in Agriculture, 19
Precipitated Phosphate, 71
Premiums, 13
Privileges of Membership, lxxxvi
Prize Awards, 1913, iii
Prizes, Conditions and Regulations, re adjudication of, cxxxiii
Pruning, 199
Pullets, 194

RACK, EDMUND, by THOS. F. PLOWMAN, 1
Rack, E., His Contributions to Literature, 35
—— ——, His Portrait, 20
Reclamation of Moor Land, 218
Red Clover, 82
—— Fowls of Rhode Island, 147
—— Stripe in Timber, 61
Regulations for Live Stock, cxxv
Report of Consulting Chemist, Dr. J. A. Voelcker, 149
Rhode Island Red Fowls, 147
Root Parasites, 55
Roots, 27
——, Feeding Without, 173
——, Sheep on, 191
Rural Text Books, 221
Rusts, 62

SAMPLES FOR ANALYSIS, instructions for taking, ci
Schools of Husbandry, 29
School of Mining, 109
Sea-Sand, Composition of, 107
Separators in Germany, 170
Sheep, Conditions and Regulations for, cxxxii
——, Diseases affecting, 151
——, Fattening of, 191
—— on Roots, 191
——, Prizes for, in 1914, cxix
Sheep-Sick Fields, 153
Shire Horses, Prizes awarded to, iv
Shoeing, Prizes awarded for, lxix
Shoeing, Prizes for, in 1914, cxxiv
Shorthorn Cattle, Prizes awarded to, xxiii
Society, First Meeting of the, 10
——, General Operations of the, 112
——, Objects of, lxxxvi
Society's, Old Minute Books, 2
Soft Turnips at Cockle Park, 174
Soil, and Selection of Fertilisers, 69
Soils, Lime in, 70
"Soil, The Fertility of the," Review, 216
Solubility of Fertilisers, 64
Somerville A. F., on the Butter-Test Classes, 102

Sorghums, 225
South Devon Cattle, 93
—— —— ——, Prizes awarded to, xx
—— —— Sheep, Prizes awarded to, xliv
Southdown Sheep, Prizes awarded to, xlvi
Spray Fluids, 128, 131
State Recognition of Agriculture, 22
Steamed Bone Meal, 67
Sterility, 164
Sterilized Milk Fed Children, 181
Sterilizing Milk, 180
Strawberries, Eelworm Disease of, 148
Strawberry Moth, 136
Stewards, xcvi
Successful Farming, 222
Summer Spray Fluids, 131
Sussex Cattle, Prizes awarded to, xxviii
Swansea Meeting, xci
Swedes, 171
—— at Cockle Park, 174

TAMWORTH PIGS, Prizes awarded to, lvii
Tannin in Cider, Estimation of, 127
Tapeworms, 158
Timber, Red Stripe in, 61
Toothwort, 56
Truro, Attendance at, 97
——, Butter-Test Classes at, 102
—— Meeting, 1913, Judges at, i
——, Milk-Test Classes at, 99
—— Show, 98
—— Show, 1913, Financial Result, clvii
——, Society's Exhibition at, 94
Truro, The Forestry Exhibition at, 110
Trustees, xci
Tuberculin Test, 170
Tuberculosis and Milk, 178
—— Order, 39
—— Order in Lanark, 52
——, Report of Royal Commission on, 179
Turkey Breeding, 189
Turkeys, Eggs of, 191
Turnips, 171

VALUATORS, VETERINARY INSPECTORS AS, 48
"Vegetable Proteins, The," Review, 209
Ventilation of Cowsheds, 88
Veterinary Inspectors as Valuators, 48
Vice-Presidents, xci
Vincent, Dr. R., on Report of Royal Commission, 178
Voelcker, Dr. J. A., Report of Consulting Chemist, 149
——, J. A., on Milk-Test Classes at Truro, 99

WHITE SHORTHORN FOR CROSSING, 91
Wind Scorch of Apple Foliage, 138
Winter Spray Fluids, 130
—— Stabling of Horses, 183
Woolly Aphis, 135, 212

YELLOW RATTLE, 57
Yellow Turnips at Cockle Park, 174

"ZOOLOGY, AGRICULTURAL," Review, 211

END OF VOL. VIII.

BATH:
PRINTED BY WILLIAM LEWIS & SON, 12, NORTH GATE.

BREEDERS' DIRECTORY.

HORSES.

Brydon, Robert, Seaham Harbour, County Durham. Breeder of Pedigree Clydesdale Horses. Chief Stud Horses: Silver Cup (11184) and Bonnie Buchlyvie (14032), both of which have been first-prize winners at the Royal and Highland Shows. Bonnie Buchlyvie was also Cawdor Cup winner in 1909. Colts and Fillies on sale. Foreign orders carefully attended to. Inspection invited. Telegrams and station: Seaham Harbour.

Brandt, Henry B., Capenor, Nutfield, Surrey. Breeder and exhibitor of high-class pedigree Hackneys. Brood mares: Fragility, Medalia, Beckingham, Lady Helmsley, Leopardess, Shelbourne Portia, Madame Pompadour, Shirley Violet, and Ryburn Lucinda, etc. Stallions: Capenor Matador, by Mathias A 1, out of Madame Pompadour; Forthright (11433), by Polonius, out of Fortuna. Mares, young stock and show horses, by Polonius, Mathias, and Royal Danegelt, etc., for sale. Apply to E. L. Ambrose at above address.

Conchar, John, Wylde-Green, Birmingham. Breeder of high-class Shires and Hackneys. Several have been successful in the show-ring. Colts and Fillies by the leading Stallions of the day.

Dickinson, George, Cark Mills, Cark-in-Cartmel. Thoroughbreds, Hunters, Harness Horses, Shires and Clydesdales, all ages, thoroughly trained and unbroken. Best Yorkshire, Cumberland, Westmorland, and Lancashire blood. Nearly all prize-winning stock, 600 prizes won, including London, Royal, Lancashire Championships, North Lonsdale, Cartmel, Warrington, Ramsbottom, Southport, Windermere, Ormskirk, and Westmorland County. Prices reasonable. Communications invited.

Dugdale, Marshall, Llwyn Stud, Llanfyllin, Montgomeryshire. Extensive breeder and exporter of Welsh Ponies and the old type of Welsh Cobs. Patronised by Royalty.

Fleming, J. Willis, Esq., Stoneham Park Stud, Eastleigh, Hants. Polo stallions: Vectis (G.S.B. Vol. XXII. and P. & R.P.S.B., Vol. XII.), by Vernham out of Fruitgirl by Meddler, and Rajah (P. & R.P.S.B. Vol. XII.), by Rupert, by Rosewater. These stallions have won prizes at the leading shows; they both hold Board of Agriculture Certificates of soundness and are good stock getters. Their young stock have won many prizes. Young ponies occasionally for sale. Apply F. E. Seymour at above address.

Graham, Robert, Kaimflat Farm, Kelso. Breeder and owner of high-class Clydesdale Stallions, Colts, and Fillies: most fashionable blood. Large selection. Inspection invited. Station: Kelso, N.E. and N.B. Railways.

Kelly, Dunbar, Coombe, Kingston-on-Thames. The Coombe Polo Pony Stud, Young Stock, also high-class made and unmade polo and riding ponies always for sale. Many prizes won by playing ponies trained at this stud.

Kenworthy, John W., Castle Hill, Kelsall, Chester. Shire Stallions for hire or service. Particulars, apply James Cliff, Stud Farm, Kelsall, near Chester.

Lort, Miss Eurgain, Castlemai, Carnarvon, North Wales. Hackney, Thoroughbred and Welsh Ponies, from late Mr. W. Lort's old Welsh trotting stock, who bred Old Steel Grey, Leybourne, Trotting Topsy, etc.

Miller, W. S., Forest Lodge, Brecon, S. Wales. Most extensive breeder of best class of Welsh Mountain Ponies, Cobs, and Entires in Wales.

Muntz, Frederick Ernest, Umberslade, Hockley Heath, Warwickshire. Shire Horse Stud Stallions, Mares, Fillies; prize winners. Particulars from Mr. John T. B. Hartley, Estate Office, Umberslade, Hockley Heath, Warwickshire.

Pearson, E. E., Esq., Brickendon Shire Stud. A number of Stallions kept for service, or to let on reasonable terms, and Stallions, Mares and Fillies of the best blood, and in growing condition, always on sale. Prize-winners. The Stud Farm can be seen by appointment. For terms,

HORSES—*continued.*

nominations, and full particulars, apply, Estate Office, Brickendonbury, Hertford. Herts. Telegrams: Stud, Avenue, Hertford.

ROBINSON, ERNEST W., BROOKLEIGH STUD, LISCOMBE, LEIGHTON BUZZARD. Hackenschmidt, Family 6, G.S.B. Vol. 20, p. 892. The Tower. Family 8, G.S.B. Vol. 21, p. 626. Irish-bred, one, two, three, and four-year-olds. Brood Mares, made and un-made Hunters for sale. For particulars apply to Stud Groom, as above.

RYCROFT, W. W., DRAKE HILL STUD, BINGLEY, YORKS. Breeder of Pedigree Hackneys and Ponies. Stallions and young stock suitable for export, at Stud. London Junior Champions. Hopwood King (11804), Admiral Cliquot (11667), Heaton Performer (11063). Telegrams: Rycroft, Drakehill, Bingley. Telephone: 132 Bingley.

SMITH, THOMAS, SHIRLEY STUD, HALL GREEN, BIRMINGHAM. Breeder of high-class pedigree Hackneys and Hackney Ponies. At Stud, Hackney Stallions "Admiral Crichton" and "Shirley Viceroy." Pony Stallion "Shirley Sir George." Full particulars on application. Brood mares, Harness Horses and Young Stock of finest prize-winning strains for sale.

TAYLOR, C. HOWARD, HAMPOLE PRIORY, NEAR DONCASTER. Good young Polo Ponies always for sale, bred from mares which have been good Polo Ponies and prize-winners. Also a few undersized Ponies suitable for racing in India. Stallions: Field Marshal (512), a prize-winner and good stock getter. Registered by Board of Agriculture as sound.

CATTLE.

Aberdeen Angus.

BALLIOL COLLEGE HERD, founded in 1880. The herd from which so many champions have been sent. Great attention given to purity of blood and milking properties. For catalogue apply to Clement Stephenson, Sandyford Villa, Newcastle-on-Tyne,

COOPER, SIR GEORGE, HURSLEY PARK, WINCHESTER. All fashionable strains: Prides, Ericas, Miss Burgess. Stock Bulls: Evolsurus, sire of many winners; Black for Ever of Ballindalloch. For catalogue, apply Estate Office, Hursley, Winchester.

CATTLE—*continued.*

CRIDLAN, J. J., MAISEMORE PARK, GLOUCESTER. Stock Bull "Everwise," Champion R.A.S.E., the Highlands, etc., etc. Awarded Championships 1907, Smithfield, and Birmingham, 1910 and 1911, Norwich. 1912. Seventeen gold medals, 33 silver medals, 144 first prizes.

CURRAGH GRANGE, THE, CURRAGH. Herd of Aberdeen-Angus Cattle, the property of Captain J. H. Greer. Select families: Legend's, Ericas, Prides, Jipseys, Nightingales, Miss Burgess, Rubys, and Marys. Bulls and Cows for sale at all times. Apply R. Weller, Curragh Grange Farm, The Curragh, Co. Kildare.

DOONHOLM HERD OF ABERDEEN-ANGUS CATTLE, the property of James Kennedy, of Doonholm, Ayr. consists of carefully bred high-class animals of the most fashionable families. Representatives of this herd, all bred at Doonholm, won nine firsts, two championships, and one reserve championship at the Royal and Highland Shows of 1908. Catalogues on application.

STENHOUSE HERD OF ABERDEEN-ANGUS CATTLE. Bulls, Cows, Heifers for sale of the Trojan Erica. Prides-of-Mulben and Jilt families. Stock Bull: The Royal Breed Champion and H. and A. Society 1st Prize Bull of 1906–1908, Everlasting of Ballindalloch (24435). Inspection invited. Apply D. M. MacRae, of Stenhouse, Thornhill, Dumfriesshire.

ROSEHAUGH, ROSS-SHIRE. Famous herds of Shorthorn and Aberdeen-Angus Cattle; select studs of Clydesdale Horses and Highland and Shetland Ponies. All of first-class breeding. Particulars from Bilbert R. McGarva, Rosehaugh, Avoch, Ross-shire.

Ayrshire.

WALLACE, JAMES, AUCHENBAINZIE, THORNHILL, N.B. Breeder of Pedigree prize-winning Ayrshire Cattle.

BREEDERS' DIRECTORY.

CATTLE—*continued.*

This herd of old standing is bred for dairy purposes; beauty and style. Young Stock by Milk-record Sires.

Devon.

HUXTABLE, JOHN L., OVERTON, BISHOP'S TAWTON, BARNSTAPLE. Devon Cattle and Devon Longwoolled Sheep. Winner of Champion prize for Bulls at the Association Show and Sale at Exeter, 1912. Twice Champion for Devon Longwoolled Sheep at Devon County Shows for all Breeds, and numerous other prizes.

Guernseys.

GUERNSEY CATTLE. The Clytha Herd of Pedigree and Prize-winning Guernseys. Cows, Heifers, and young stock on sale. Inspection invited. Apply, C. L. Herbert, Clytha Park, Abergavenny.

PEDIGREE HERD PRIZE-WIINNING GUERNSEYS, bred from Island strains. Bulls and Heifers for sale. Mrs. R. C. Bainbridge, Elfordleigh, Plympton, S. Devon.

Herefords.

HILL, JOHN RICHARD, ORLETON, R.S.O., HEREFORDSHIRE. Pedigree Hereford Cattle. One of the oldest herds extant. Young Bulls and Heifers of purest lineage and quality.

THOMAS, D. A., LLANWERN, NEWPORT, MON. Prize-winning herd from Stocktonbury, Hampton Court, Court House, and other leading strains. Young Bulls and Heifers by "Perfection" (22450), and "Pandorus" (23658), for sale. All eligible for the A.H.R. Also pedigree Shropshire Sheep. Inspection invited. One hour from Hereford, two and a half from London.

Jerseys.

CADOGAN, RIGHT HON. EARL, K.G. Pedigree herd of Jersey Cattle. This hard has won many prizes and Blythwood Bowls. Particulars from M. Mortimer, Estate Office, Culford, Bury St. Edmunds.

PEDIGREE JERSEYS from best prize-winning strains. Young calves and Heifers usually for sale. Inspection and correspondence invited. Full particulars: Miss Enderby, Beckington House, Beckington, Bath.

CATTLE—*continued.*

Kerry.

WAITE, T., HIGHLANDS, REDHILL, SURREY. Breeder of Kerry Cattle. Prizes won at all the principal shows. Cows, Heifers, and young Bulls generally for sale.

Lincolnshire Red Shorthorn.

ROBINSON & SON, ANDERBY, ALFORD, LINCS. Lincoln Red Shorthorn Bulls for sale, descended from the best herds. Beef and Milking qualities combined. Inspection invited. Station: Mumby Road, G.N. Railway.

Polled Angus.

HOYLES, GEORGE, SKIDBY MANOR, HULL. Polled Angus Cattle: Queen Mother, Erica, and Prides. Bulls and Heifers for sale. Inspection invited. Several prize-winners.

Red Polls.

NEWTON, CHARLES FEAKES, SAHAM, WATTON, NORFOLK. Red Polls comprising Champion strains, first-class yields, milk and butter fat. Heifer from this herd First Norfolk, Suffolk. Reserve R.A.S.E. Milking Class. Bull, 1,400 gallon cow on sale, and others.

Shorthorn.

ATTWATER, J. A., DRY LEAZE, CIRENCESTER. Herd of 130 Dairy Shorthorns. Milk records kept, heavy milkers with strong constitutions. Many of Bates pedigree bulls and bull-calves (good milk records, both sides), always on sale. Herd established 1898. Prizes won Royal and County Shows.

BEAUCHAMP, F. B., WOODBOROUGH HOUSE, NEAR BATH. Shorthorn Cattle: Missie, Eliza, Princess Royal, Cinderella, and other well-known strains. Stock Bulls include Adbolton Ruddy King (by the famous King Christian of Denmark). Inspection invited.

COLLEGE OF AGRICULTURE, HOLMES CHAPEL, CHESHIRE. Pure-bred Dairy Shorthorns, milking records

CATTLE—*continued.*

kept. Bull Calves and Heifers for sale. Station, Holmes Chapel, L. & N.W.R., ½ mile. For particulars apply to the Principal.

Hobbs, Robert W. & Sons, Kelmscott, Lechlade, Glos. Herd of 500 Dairy Shorthorns. Milk records kept. Upwards of forty champion, first trials at the leading shows, since May, 1913. Including three firsts, one second and one fourth prize at the Royal Show. Two firsts, one second, and one third prize at Tring, and four seconds, two thirds and one fourth prize at the London Dairy Show. Pedigree bulls and bull calves always on sale, and generally a few good three and four cross non-pedigree bull calves at moderate prices, suitable for use in non-pedigree dairy herds. All cows in milk and the stock bulls have passed the tuberculin test. Telegrams: Hobbs, Lechlade.

Lewis, The Hon. Herbert C., Hean Castle, Saundersfoot, Pembrokeshire. Pedigree Shorthorns of the Augusta, Beauty, Brawith Bud, Broadhooks, Clipper, Lavender, Lady Clara, Missie, and Blanche families. Stock Bull: Morning Star (109463), roan.

Lydney Park Herd of Pedigree Shorthorns, the property of Charles Bathurst, Esq., M.P. Young Bulls and Heifers from good milking strains (all dark reds). Apply J. Lauder, Estate Office, Lydney Park, Glos.

Marden Park Shorthorn Herd, the property of Sir Walpole Greenwell, Bart. Station: Woldingham (within 17 miles of London on the London, Brighton and South Coast Railway). This splendid Herd of Shorthorns, with great adaptability for producing flesh, can be viewed any time by appointment. The Stock Bulls are Marden Dane (106128) and Pride of Sittyton (100005). The Herd has been very successful in the showyard. For further particulars apply, L. G. Wrigley, Estate Office, Marden Park, Surrey.

Robinson, J. & H., Iford, Lewes, Sussex, and Lowfield Heath, Horley, Surrey. Select Herd of Pedigree Dairy Shorthorns. Milk

CATTLE—*continued.*

records kept. Best Bates blood, including Acombs, Barringtons, Blanches, Darlingtons, Foggathorpes, Cambridge Roses, Oxfords, Waterloos and Wild Eyes families. Young Bulls for sale, whose dams and also sire's dams are heavy milking cows with well-shaped udders and sound constitutions. Inspection invited. Telegrams: Robinson, Iford, Lewes. Telephone: 114 Lewes.

Sanders, J. W., Gilmorton, Lutterworth. Dairy Shorthorns, combining milk with flesh. Winners at London Dairy Show, 1908, and Shorthorn Society's Prizes, Royal Dublin, 1909 and 1910, Oxford, Royal Counties, and Royal, 1910, Oxford, Leicester, Northampton and Warwick 1912 and 1913. Average milk yield of herd for the last six years 7,230 lbs. Young bulls for sale.

Stratton, Richard, The Duffryn, Newport. Large Herd. Milk and flesh combined. Champion Dairy Cow, "Model Maid," sired by a Duffryn Bull.

Thornton, Frank H., Kingsthorpe Hall, Northampton. Pedigree Dairy Shorthorns. Blanches, Butterflies, Darlingtons, Rubies, etc. Winner of many prizes, including 1st prize Milking Trials, Royal Show, 1911. Daily milk records kept.

Sussex.

Groves, James, Brownings Manor, Blackboys, Sussex. Pedigree Herd of Sussex Cattle, comprising the best blood of this celebrated Beef Cattle. Numerous prizes won at the Royal and other Shows. Young Bulls and Heifers for sale. Special attention given to export orders. Can ship by own steamers to Argentine. Address as above, or to Farrar, Groves & Co., Ltd., 147, Leadenhall Street, London. Cable address: Fargrove, London.

Various.

Brown, Thomas & Son, Marham Hall, Downham Market. Herd established 57 years. P. 3 strain predominates. Many prizes won, including twelve Firsts, four Seconds, one Third, two male Championships, and two Reserve Male Championships, at the four principal breeding

BREEDERS' DIRECTORY.

CATTLE—*continued.*

shows, 1913, two Firsts and Breed Cup, Smithfield, 1912. Daily Milk record kept. Stock of all ages for sale. Telegrams: Brown Hall, Marham.

BRIDGES, J. H. This old-established herd of the best families can be seen at Langshott Home Farm, Horley, Surrey, and catalogue obtained on application to Albert Pulling, Langshott, Horley.

FOX-BROCKBANK, ARTHUR H., KIRKSANTON, CUMBERLAND. Herd of Pedigree Galloway Cattle, most fashionable blood, including winners of 1st and champion prizes at the Highland, Dumfries, Castle Douglas, the Royal, etc. Cattle always on sale.

HILLIARD, JOHN, LAKE HOTEL, KILLARNEY. Famous Castle Lough Herd. The Champion at the Royal Show, Norwich, 1911, was from this herd, and many other prize-winners. Pedigree Heifers and Bulls generally on sale. Useful choice non-pedigree Heifers always on sale at moderate prices.

LORD RAYLEIGH'S DAIRY FARMS. Cows, Heifers and Young Bulls from heavy milking cows, always for sale. Records kept for 28 years. Inspection invited. Apply: G. M. Strutt, Whitelands, Witham, Essex.

RILEY, LAUNCELOT, THE TWERNE, NEAR LEDBURY. Pedigree Bulls and Heifers from prize-winning and best milking strains. Station: Ashperton, G.W.R. Telegrams: "Twerne Trumpet."

WALLET, WILLIAM, LIVE STOCK AGENT, CASTLE DOUGLAS, N.B., supplies on moderate commission all classes of Scotch Cattle and Sheep. Large consignments of pure-bred Galloway Cattle sent to England every year for establishing herds, and also for crossing with white bulls.

SHEEP.

Hampshire Downs.

JUDD, EDWARD THOMAS, COCUM, SUTTON SCOTNEY, HANTS. Pedigree Hampshire Downs. Noted for great size, quality, and hardiness of constitution. Selections always for sale.

SHEEP—*continued.*

Kent or Romney Marsh.

DUNSTER, E. B., MONYPENNY HOUSE, EAST GULDEFORD, RYE. Established over sixty years. Breeder of pure Romney Marsh Sheep, Flock No. 161. Noted for good flesh and wool, combined with sound constitution. Annual sale of Ram Tegs at Rye since 1873. Choice Ewes for sale.

NEAME, FREDERICK, MACKNADE, FAVERSHAM, KENT, ENGLAND. Registered Flock No. 5. Successful exhibitor since 1870, winning 8 specials, 53 firsts, 64 second, 34 third prizes at the leading shows during the last 12 years, including Championship in First Flock Competition Kent or Romney Marsh Sheepbreeders' Association, 1912. Quality and evenness of fleece a speciality.

FINN, ARTHUR, WESTBROKE, LYDD, KENT. Flock established 1770. Inspection invited of 2,000 registered Ewes and Rams, grazed only on Romney Marsh. Highest references to purchasers in South America, New Zealand, and at home. Selections always for sale.

Lincoln Long-Wools.

BROCKLEBANK, JOSEPH, CARLTON-LE-MOORLAND, NEWARK. Pure-bred Lincoln Long-wool Sheep, Flock 10. Large numbers are sold for export every year. Given satisfaction both at home and abroad. Inspection invited. Telegrams: Bassingham. Station: Navenby.

HOYLES, GEORGE, SKIDBY MANOR, NEAR HULL. Pure Lincoln Long-wool Sheep. True type, sound constitutions, lustrous, long wool. Give satisfaction at home and abroad. Sires used this year: Riby Pointon Prince (10926), Riby Gordon (9743), Barff Mere Skidby (12175), Laughton Robin Skidby (12380), Skidby Laughton 4th (12630). Foreign and home buyers invited to inspect flock. Rams and Ewes exported to Buenos Ayres, Mexico, Russia.

Oxford Downs.

HICKS-BEACH, HON. MICHAEL, M.P., COLN ST. ALDWYN, FAIRFORD, GLOUCESTERSHIRE. Pedigree Flock Oxford Down Sheep. Prize-winners. Rams and Ewes for sale. Particulars on application to bailiff.

SHEEP—*continued.*

HOBBS. ROBERT W. & SONS, KELMSCOTT, LECHLADE, GLOS. Flock of over 1,000 registered Oxford Downs. Numerous prizes won at the principal shows. Rams, Ram Lambs and Ewes always for sale. Rams sold annually at Oxford, Cirencester, Kelso, Edinburgh, Northampton, and other fairs. Telegrams: Hobbs. Lechlade.

Ryeland.

RYELAND SHEEP. Pedigree and prize-winners at various shows, Royal Worcester, Abergavenny, and others. Rams and young stock always on sale. Inspection invited. Apply, C. L. Herbert, Clytha Park, Abergavenny.

Southdowns.

CADOGAN, RIGHT HON. EARL, K.G. Southdown Sheep. Pedigree stock. This flock has won very many prizes and silver medals. For particulars apply M. Mortimer, Estate Office, Culford, Bury St. Edmunds.

MARDEN PARK SOUTHDOWNS, the property of Sir Walpole Greenwell, Bart. Station: Woldingham (within 17 miles of London, on the London, Brighton, and South Coast Railway). Registered Flock Book No. 77. A number of pure-bred Rams and Ewe Tegs by pedigree sires of the best blood always for sale. Numerous prizes taken in the showyard. For further particulars, apply, L. C. Wrigley, Estate Office, Marden Park, Surrey.

Various.

STENHOUSE BLACKFACED SHEEP. Flock bred from prize rams, and no expense spared to secure the best rams sold in Scotland. Ewes reared on sound, high land, 1,000 feet, and stock guaranteed suitable for any climate. Inspection invited. D. M. MacRae, of Stenhouse, Thornhill, Dumfriesshire.

PIGS.

Berkshires.

BEHRENS, CAPTAIN, SWINTON GRANGE, MALTON, YORKSHIRE. Pure-bred Berkshire Boars and Gilts usually for sale, bred from prize-winners and most noted blood. Apply, Bailiff, Home Farm.

PIGS—*continued.*

CORPORATION OF READING. Whitley Select Herd Pedigree Berkshires, 350 head best prize-winning strains only. Size, type, quality and hardy constitutions unsurpassed. Not forced for sale or show. Young Boars and Sows suitable for export or home breeders. Reasonable prices. T. Chettle, Whitley, Reading, Berkshire.

STIMPSON, GEORGE, "MOORCROFT," FARLEIGH COMMON, WHYTELEAFE, SURREY. Telegraphic address: "Stimpson, Warlingham." Railway Station: Upper Warlingham, L.B. & S.C.R. Breeder Berkshire Boars and Sows. Best blood only kept. Several unrelated strains.

Large Blacks.

HEATHCOT HERD (LATE GOODAMEAVY) PEDIGREE LARGE BLACK PIGS. Prizes won at leading shows; also second, third, fourth, fifth prizes young Boar class, Devon County Show, 1912: second, pairs of Gilts. Boars and Gilts for sale. Oscar Muntz, Heathcot, Yelverton, South Devon.

ROBINSON, J. AND H., IFORD, LEWES. Oldest registered Herd of Large Black Pigs in South-Eastern Counties. Pigs sent on approval to members of R.A.S.E. One and a quarter hours from London.

Large Whites.

GREENHALL, SIR GILBERT, BART., WALTON HALL, WARRINGTON. Pure-bred Pedigree Large White Yorkshires, all bred true to type and entered or eligible for entry in the Herd Book. A choice selection of Young Boars and Sows on sale. For particulars, apply to W. Bainbridge, Walton Estate Office, near Warrington, or to Richmond Daybell, Manager, The Piggeries, Higher Walton, near Warrington.

HOLLINGWORTH, JOHN FROST, WESTON-ON-TRENT, DERBY. Breeder of Large White Pigs. Young Boars and Gilts on sale. Large winners traced to this herd. Station: Weston-on-Trent, Midland Railway.

HUGHES, ALFRED, PACKWOOD GRANGE, KNOWLE, NEAR BIRMINGHAM. Select herd of Pedigree Large White Yorkshires, bred from prize-winners. Pigs of various ages for sale at moderate prices.

BREEDERS' DIRECTORY.

PIGS—*continued.*

Mitcheson, Harry, Bentley, Nr. Atherstone. Pedigree Large White Yorkshire Pigs, Boars and Gilts always on sale at farmers' prices. Station: Atherstone, L. and N.W.R. Telegrams: Mitcheson, Baxterley.

Pedigree Large White Yorkshire Pigs. Boars and Sows for sale, descended from best herds. W. Mitchell, The Vale, Kirby-Bedon, Trowse, Norwich.

White, Alfred W., "Hillegom," Spalding. Breeder of Pedigree Large White Pigs. Young stock from great prize-winners always for sale. Inspection invited.

Lincolnshires

Charnwood Herd of Lincolnshire Curly-Coated Pedigree Pigs. All related to my 1913 First Prize winners Grand lot of Boars and Sows. All ages. Moderate prices. Splendid testimonials. G. Simpson, Lowdham, Notts., England.

Middle Whites.

Buckley, Wilfred, Moundsmere Manor, Basingstoke. Breeder of Royal Champion, 1913, etc., etc.

Jerome, Mrs., Bilton Hall, York. Pedigree Middle White Pigs, prize-winners. Boars and Gilts for sale.

Salvation Army Land Colony. Pedigree Herd of Middle White Pigs, including 1st Prize Young Boar at Royal Show, 1913. Boars and Gilts for sale at reasonable prices. Inspection invited. The most careful selection will be made for customers at a distance who are unable to make a personal inspection. Apply: The Governor, Land and Industrial Colony, Hadleigh, Essex.

Stapleford Park Herd of Middle White Pigs. A few Gilts and Boars for Sale. Apply, C. S. Harvey, Wymondham, Oakham.

Tamworths.

De Hamel, Egbert, Middleton Hall, Tamworth. Pedigree Red Tamworth Pigs, Boars, Gilts, and In-pig Sows, bred from prize winners at Royal and County Shows. Prices moderate. Full particulars on application.

PIGS—*continued.*

Ibbotson, Robert, Knowle, Warwickshire, England. Breeder and exporter. Pedigree Tamworth Red Pigs with size, quality and constitution. This herd has won cups, medals and special prizes at all the leading shows for the past twenty-five years. Pigs of all ages for sale at moderate prices.

Mitchell, W. H., Elmdene, Kenilworth. Tamworth Pigs. Herd established thirty years. Present breeding stock, Royal winners. Prices on application.

Osmaston Manor Herd of Tamworth (Pedigree Red) Pigs. Young Boars and Gilts from this herd for sale: out of prize winners. Apply, Estate Office, Osmaston Manor, Derby.

Various.

Bainbridge, Mrs., Elfordleigh, Plympton. Foundation from Cornwood Herd. Boars and Gilts from choice winning blood on sale. Apply Bailiff, Home Farm.

Riley, Launcelot, The Twerne, Ledbury, Herefordshire. Pedigree Boars and Gilts from prize-winners. Boar in use, 1st Prize, Royal Show. Export commissions executed. Station: Ashperton, G.W.R. Telegrams: "Twerne Trumpet."

MISCELLANEOUS.

Bradwell & Sons, John H., Auctioneers, Estate Agents, Land Surveyors, and Tenant-Right Valuers, Thurland Street, Nottingham, Southwell, and Mansfield. Weekly cattle markets at Nottingham and Mansfield. Fortnightly Horse Sales at the Midland Counties Horse Repository, Nottingham. Commissions executed. Telegraphic address: Agricola, Nottingham.

James Craig, Ltd., Auctioneers and Live Stock Salesmen, Ayr. All Class of Scotch Breeds of Feeding and Dairy Cattle. Fat and Store Sheep and Lambs supplied on Commission. Orders carefully executed. Numbers sold in 1912:—35,822 cattle, 293,644 sheep and lambs, 1,877 horses. List of Special Spring and Autumn Sales can be had on application. Special Railway Rates for lots of 200 and upwards.

MISCELLANEOUS—*continued.*

Debenham, Miss, School of Rural and Domestic Economy, Ipswich. 450 acres. Pedigree British Holsteins, Southdown flock, well-bred Goats. Many pure varieties. Poultry, Turkeys, Ducks, Geese. Particulars on application.

Entwistle, J. F., The Firs, Calder Grove, near Wakefield. Twenty years judge at principal shows, and exporter to all parts of the world, has always highest quality Bantams in all varieties for sale. All other classes of Poultry or Pigeons purchased and exported on commission. Breeding stock reasonable. Eggs in season. Bantams for children's pets from 5s. each.

Essex and Eastern Counties. Agricultural Estates, Residences and Farms for Sale and to Let. Printed Register forwarded gratis on application. Particulars inserted free of charge. A good medium for acquiring or disposing of properties in Essex and surrounding counties. Balls and Balls, Established 1846, Land Agents, Surveyors, Auctioneers, Tenant-Right and Property Valuers, Fire and Hail Assessors, Tithe Agents, Special attention given to the management of estates and reports made. Castle Hedingham. 'Phone No. 2, Braintree, 'Phone No. 40, Essex, and Haverhill, and Sudbury, Suffolk.

Fowler and de la Perrelle, Porter's Lane, Southampton. The largest importers of Jerseys and Guernseys. Cows and Heifers calving all the year round. Bulls of the best strains. No objection tuberculin test. Moderate prices. Shipping attended to. Horn Trainers and Self-piercing Bull Rings. Telegrams: "Importers, Southampton."

George, Isaac, J.P., Manor House, Llanvihangel, Gobion, Abergavenny. Shire-bred Stallions, Mares, Fillies; Hereford Bulls and Cows; all entered in Stud and Herd Book; several prize-winners from best strains. Penpergwm Station.

MISCELLANEOUS—*continued.*

Lincolnshire Stock Auctioneers and Agents, Dickinson, Riggall and Davy. Agricultural Auctioneers, Valuers and Estate Agents. Speciality, Lincoln Red Shorthorns and Long-wool Sheep. Markets and sales. Offices, Louth, Grimsby, and Brigg.

Lloyd & Sons, Frank, Auctioneers and Valuers, North Wales Horse Repository, Wrexham and Cheshire Horse Repository, Crewe. Cattle Markets: Wrexham, Crewe, Whitchurch, Ellesmere, Malpas, St. Asaph, Congleton, Abergele and Caerwys. Property, Furniture and other sales. Valuations of all descriptions. Head Offices, Wrexham and Crewe. Branches: Whitchurch (Salop), Ellesmere (Salop), and Abergele.

Morey & Sons, William, Auctioneers, Valuers and Estate Agents. West Street, Bridport, and at Beaminster, Dorset. Sales, Hotel, Tenant-Right, Probate, and other Valuations conducted in any part of the country. Market sales held every Wednesday at Bridport; Beaminster periodically.

Philips, John William, Heybridge, Tean. Stoke-on-Trent. North Stafford Railway. Shire Horses and Shorthorn Cattle. Telegrams: Tean.

Smith-Barry, J. H., Esq., Stowell Park, Pewsey, Wiltshire, often has young Bulls and Heifers for sale.

Waters & Rawlence, Auctioneers and Valuers, Salisbury. Office of Hampshire Down Sheep Breeders' Association. Secretary and Treasurer: James E. Rawlence. Assistant Secretary: John Mountford.

Worcestershire, Staffordshire and Shropshire. Chas. Joseland, F.S.I., and H. Nock, Auctioneers, Land Agents and Valuers. Fortnightly stock sales, Kidderminster; weekly stock sales, Wolverhampton: Great Annual Sheep Sale, Kidderminster, September; Spring and Autumn sales of Store Cattle and Sheep. Offices, Kidderminster and Wolverhampton.

PRESERVED WOOD FENCING, &c.,

For Estates, Railways, Collieries, &c.

Creosoted Fencing is neat in appearance and can be fixed by any handy labourer. It will last three times as long as Unpreserved Wood, including Larch, and needs no painting or tarring. Unlike Wire or Iron Fencing, it is not dangerous to Stock, being readily seen. During thunderstorms, Cattle and Horses have frequently been killed through being near to Iron Fences. Death has also often been caused by animals swallowing broken pieces of wire.

The only Medal Awarded at the Royal Mining, Engineering, and Industrial Exhibition, Newcastle-on-Tyne, 1887, for Superior Preservation of Timber, was given to ARMSTRONG, ADDISON & CO.

TELEGRAMS: TIMBER, SUNDERLAND. TELEPHONES: 1715 AND 134.

ADDRESS TO CHIEF OFFICE, SUNDERLAND.

CREOSOTED WOOD CATTLE SHELTERS, STACK COVERS, AND OTHER FARM ERECTIONS.

These cost less than Stone, Brick, or Iron, and are extremely healthy. The Creosote in the Wood is an excellent disinfectant, and guards against disease.

Awarded Medals for best and most economical form of Field Fencing at Royal Agricultural Shows: Liverpool, 1910; Norwich, 1911; Doncaster, 1912; Bristol, 1913.

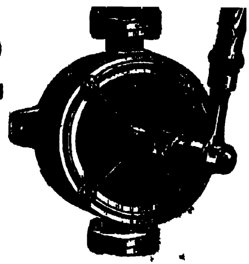
ARMSTRONG, ADDISON & CO.,

TIMBER IMPORTERS & PRESERVERS,

Have supplied, during sixty years past, **Creosoted** and **Kyanized Timber** to Railways, Estates, and Collieries, for surface and underground purposes, and have received most satisfactory and never-failing testimony to its complete preservation, and the decided economy in using it in preference to unpreserved Wood.

☞ *Illustrated Pamphlets and Testimonials relating to the durability of Preserved Timber and Sketches of Fencing, Paling, Gates, &c., on application.*

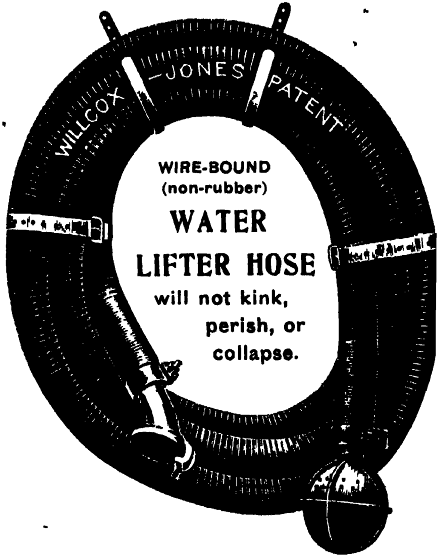
WILLCOX'S



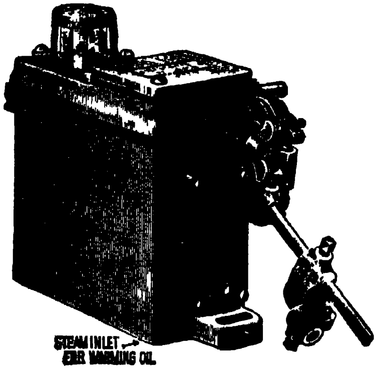
SEMI-ROTARY WING PUMPS

Lift and Force. For Carts and Farm and Estate Work, &c.

"PENBERTHY" INJECTORS.
Automatic and auto-positive. For high pressures on Traction Engines, &c.



WIRE-BOUND
(non-rubber)
WATER LIFTER HOSE
will not kink, perish, or collapse.



"Manzel" Automatic Oil Pump Lubricator
Strongly made to stand vibration on Road Locos, &c.

Lubricating Oils and Greases
for all types of Engines and Machines.

We shall be pleased to send copy of 736pp. Catalogue to Agricultural Engineers on receipt of trade card.

W. H. WILLCOX & Co., Ld.

32 to 38, Southwark Street, London, S.E.

STEPHEN PETTIFER & SONS'

CAUTION *Don't Forget* "STEPHEN"

"SAFE & SURE"

VETERINARY SPECIALITIES

A FULL LINE OF GENERAL ANIMAL REMEDIES & *VETERINARY INSTRUMENTS FOR GENERAL USE.*

SANTOVIN.

AWARDED WORLDS FAIR GOLD MEDAL AND DIPLOMA

The world-famed Remedy for Sheep and Lambs A Sure Cure and Preventive for Parasitic Diseases. **Tapeworms, Husks or Hoose, and Round Worms, Fevers, Scour,** and Debility in Sheep and Lambs Should always be given at weaning time or in summer as a preventive of disease in autumn and winter Exhibitors and Breeders find it an invaluable help for "bringing on" their sale and show sheep and rams

For autumn and winter use **SANTOVIN,** *strong* (Green label)

Guaranteed to contain purely vegetable ingredients, and free from arsenic and all mineral poisons

5/- per Can (30 to 40 Doses); ½ Gallon Cans (90-120 Doses), 13/6 and 1 Gallon (180-240 Doses for Lambs), 25/- each, carriage or postage free

SHEEP BOOK. "Health for Sheep" **32** pages Illustrated, with useful information, *free on application*

'SANTOFORM,'

Unequalled as a general antiseptic powder for wounds, sores and injuries in all animals As a **navel dressing** for newly-born foals, calves and lambs it prevents navel ill, joint evil, and infantile scour or diarrhœa. Is cheaper than anything else on the market is non-poisonous and odourless in use, and a "little goes a long way"

In sprinkler tins, 1/- and 1/9 each

SAMPLE TUBE FREE ON APPLICATION

Of all Chemists or direct.

Adopted by Colonial Government Farms and in use all over the world

'CLINCHER' STUD EAR MARKING TABLETS.

For ALL Animals Samples Free

CLINCHED

The best on the market Made of pure aluminium, featherweight Do not catch, sag, disfigure or pull out of the ear, are easily put on, and look neat and pleasant to the eye Price **10/6** per 100, marked with initials, numbers and date of year on washer (ordinary size for cattle, sheep and pigs) Larger size for cattle, **15/-** per 100, for abroad add 1/- extra for each £1 worth for postage Put up in convenient numbered and partitioned box Samples free Punches for ear, **3/6** each (Orders of £1 and upwards postage paid) Ribbon Ear Tags, for Sheep, etc, **10/-** per 100, for Cattle **12/-** per 100

BY ROYAL WARRANT

OF APPOINTMENT

Factors and Patentees of Veterinary Instruments of all kinds for general use

Illustrated and General Price Lists Free

Sole Proprietors—(Always remember "STEPHEN")

STEPHEN PETTIFER & SONS,

MALMESBURY, WILTS.

Veterinary Chemists to H M the King

IMPERIAL ACCIDENT INSURANCE COMPANY, Ltd.
ESTABLISHED [illegible]
17, PALL MALL EAST, LONDON, S.W.

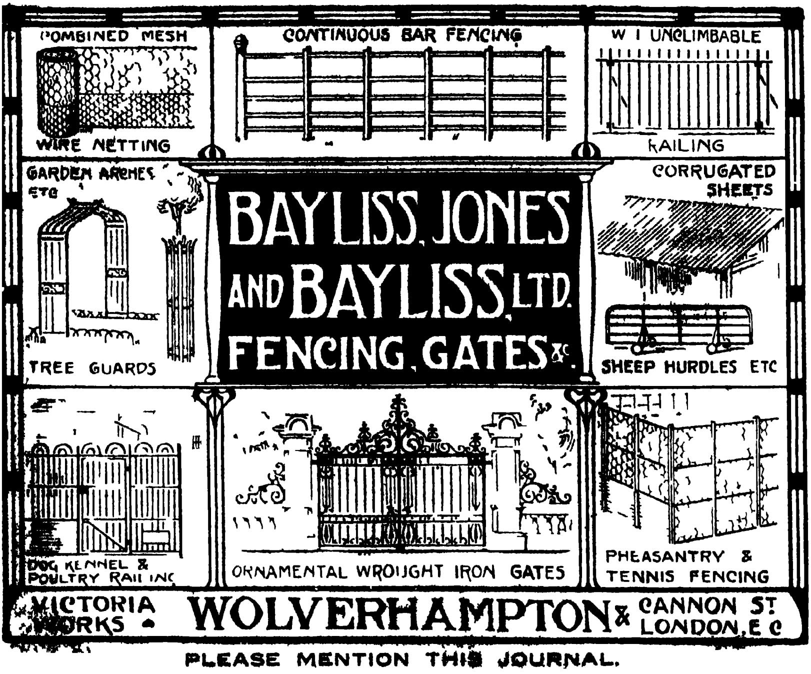
DIRECTORS.
The Rt Hon Thomas Frederick Halsey | Col The Hon. Francis C Bridgeman
Chas Selby Lowndes, Esq, M F H | E Roger Owen, Esq
Benjamin S Essex, Esq

LOCAL DIRECTORS.
The Rt Hon Lord Sempill | A E O Humphreys-Owen, Esq, J P
The Rt Hon Lord Wrottesley | Richard Marker, Esq, J P

'FARMERS' INSURANCES—LOW RATES.
HORSES and CATTLE INSURED against DEATH from Accident or Disease
COLTS INSURED for CASTRATION STALLIONS INSURED against DEATH or DISABLEMENT HUNTERS INSURED against DEATH or DISABLEMENT.

IMPERIAL FOALING POLICIES.
SPECIAL ADVANTAGES! GREAT BENEFITS! LOW RATES!
Full Market Value of Mares Insurable Foals insured to 31st December or to expiry of Annual Policy Full Amount Paid for the Foal if cast any time Double Amount payable for Foal after three months old Large Cash Payment for Barren Mares

THE "IMPERIAL" IS THE FARMERS' COMPANY
CLAIMS PAID EXCEED £500 000
PROSPECTUS POST FREE B S ESSEX Manager



PLEASE MENTION THIS JOURNAL.

I. A. R. I. 75.

IMPERIAL AGRICULTURAL RESEARCH
INSTITUTE LIBRARY
NEW DELHI.

Date of issue.	Date of issue.	Date of issue.